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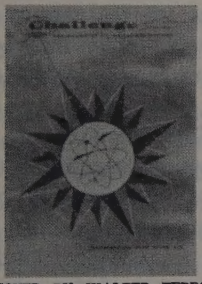

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a personal note

from the editor

the steel strike, and the art of measuring noses

STATISTICS are a boring business. I suppose most economists and interested laymen experience a sense of reality whenever they write and read the numerical measurements relevant to the economy. Everyone feels better when the "how much" of economic developments accompanies an attempt to explain the "why."

And while I am personally happy that we are constantly improving our tools with which to measure scientifically the various forces and factors which enter into the operations of an economic system, I must admit, however reluctantly, that an overreliance on such statistical tools has a tendency to make most of us economic draftsmen rather than artists. It is one thing to be able to measure the length of Rembrandt's nose in his self-portrait, and another to appreciate the blending of all the components which undeniably makes a masterpiece. To measure every part does not necessarily help us to see the whole.

The recent steel strike unleashed a flood of statistics in the popular and professional press which could, if thoroughly perused, unhinge the eyeballs from any professional or lay head. Negotiators from both sides of the bargaining table presented figures which presumably would justify the demands and the counter offers. The interested bystander was left with the impression that there was something to be said for the position of each side.

The Economic Policy Committee of the AFL-CIO, anticipating the steel strike by two months, announced in its *Economic Trends and Outlook* that "if real wages are to continue to rise, this movement must be underpinned by rising manhour output and greater total production." Management figures, based on Federal Reserve and Department of Labor statistics, set out to prove that labor does not practice what it preaches. They pointed out that earnings from 1947-1949 to 1955 had increased by 41 per cent in manufacturing industries, while productivity had gone up only 30 per cent. Other figures were produced by management, based on government statistics, which supported the view that since 1947 the increase in labor costs had been paralleled by an increase in prices—such price increases being inevitable since the

rise in money wages exceeded productivity gains. Labor countered that "neither rising productive efficiency nor a bigger total production pie are *guarantees* in themselves that the cut for the wage earner will inevitably be larger." The AFL-CIO offered figures which indicated that between 1920 and 1929 factory productivity had increased by more than 50 per cent; but hourly wage rates had not advanced at all. Management countered that during the same period of 1920-1929 the prices of finished goods had declined by 37 per cent, thus in effect increasing the ratio of wages to prices by 53 per cent.

The United States Steel Corporation, in order to counter the union's claim that steel wages can be increased without corollary increases in steel prices, pointed out that its income in relation to sales was less in 1955 than it was in 1940. So there. What can we deduce from the statistics?

I think it would not be unfair to say that the boys on both sides of the table were measuring the economic nose rather than looking at the whole picture. To their credit it must be said that they were thinking of ways of avoiding another wage-price spiral. Again to their credit, they were paying their due respects to the relationship between real wage increases and real productivity gains. Not to their credit is the fact that almost all of the statistics cited relate to such segregated portions of the economy as output per manhour in *manufacturing*, price of *finished* goods, or the *steel* industry itself. But does whether we shall have inflation depend only upon what happens to wages and prices in these sectors of the economy? Can we afford to forget about government fiscal and monetary policies, the pressures of defense costs, tax requirements, the cost of food, services, rents and everything else that goes into the making of the Consumer Price Index?

The working man is concerned with being able to meet all his bills. But is he right when as a steelworker he relates his total economic situation to the economic status of the steel companies? Similarly, steel companies are concerned mostly with their own cost-price picture. But are they correct in assuming that stable steel wages will stop the increase in steel costs, other factors notwithstanding?

In the last analysis, only a relatively objective observer can answer these questions. But he can begin to do that only if he shakes himself out of the myopia of specialized statistical studies. I vote for a less frequent measuring of the nose and a more thoughtful look at the whole economic portrait.—H. B.

Challenge Notes

Bargaining facts of life; thinking big statistically

THERE was something curiously unreal about the recent steel strike. The banked furnaces, the picket lines and the enforced idleness of thousands of breadwinners were, of course, real enough. So were the steel shortages which, in spite of precautionary stockpiling by some steel customers, inevitably developed and forced many companies to lay off workers or pay "grey market" prices.

What was unreal was the maneuvering of union and management teams for bargaining position. Collective bargaining on an industry-wide scale invariably follows a certain pattern. Both parties generally begin by publicly assuming positions which they know they will have to modify eventually. That way both sides can "show" the public that they are willing to compromise and be reasonable. Which side ends up being more "reasonable" depends, in the final analysis, on which side stands to lose most by a prolongation of the strike.

Thus, it is generally agreed that when an industry is booming, as the steel industry is today, and demand and prices are high, the union finds itself in a good bargaining position. With an expanding market to look forward to, management will tend to be more yielding to union pressure and will try to pass on the increased labor costs to the consumer in the form of higher prices. In times of recession, on the other hand, when demand for its products is shrinking and jobs are scarce, management will be both unable and unwilling to increase its costs while the unions will be most anxious to reach a settlement.

As in diplomacy, the final settlement will depend on the relative power of the negotiators. And, as in diplomacy, it would be nice if this "hard little fact of life" were more generally realized.

Thinking Big Statistically

THREE WEEKS AGO the Department of Commerce published

revised estimates of our gross national product for 1955—that is, the total value of the goods and services which our economy produced last year. It seems that our GNP was 391 billion dollars last year, or about 4 billion dollars more than was originally estimated. On a quarterly basis, moreover, our GNP is now estimated to have broken through the "400-billion-dollar barrier" as long ago as the last quarter of 1955. Our economy, in other words, has been doing even better than we had been led to believe.

Revisions of this kind are not unusual. When it comes to such a comprehensive statistic as GNP, a few billion dollars more or less is not truly significant, and even the revised figures will be subject to a margin of error of millions of dollars. While we have learned a lot about national income accounting and statistical procedures in the last ten years, and while the Commerce Department's statistics are generally recognized to be the best in the world, aggregate statistics like GNP will always be tentative and incomplete.

That is why it is dangerous—especially for the layman—to generalize about economic growth in terms of GNP figures. To the expert, who is able to analyze the various components of the GNP figure, such statistics will tell a great deal about the extent and kind of economic activity. The rest of us, however, can learn more about the direction in which our economy is heading by examining some of the "smaller statistics" such as industrial production, personal income, business spending for capital plant expansion, employment, etc. Since such statistics often appear contradictory, we'll find it harder to make snap judgments about economic conditions. We'll also discover a new sympathy for the writers of business news letters and economic forecasters who are expected to come up with a new economic "trend" every week.

Mechanical Secretaries

ACCORDING to Dr. Harry F. Olson of the Research Center, RCA Laboratories, the boss of the future will be able to dictate his letters directly to a phonetic typewriter which will convert the energy of speech into conventional letters. In fact, RCA has already developed a model of such a voice-operated typewriter which is 80 per cent accurate. And that, as Dr. Olson observes, is "probably as good as the average secretary." But how pretty are these machines?—M. K.

A new pattern in Politics

by Albert Somit

Sectional issues have become national in scope, and both major parties are adapting themselves to this change

IMMEDIATE and violent reaction in the South followed recent Supreme Court rulings on segregation. At first glance, this may appear to be but another manifestation of the sectionalism which has historically characterized American politics. This impression, however, is misleading. The segregation issue is important today not because it involves an urgent regional problem but because it has become a national issue in two ways: first, because authority over segregation policy has been taken from the states; and second, because the Negro and his sympathizers are no longer concentrated in the South but are distributed throughout northern urban areas, and it has become politically hazardous to ignore their desires.

The segregation issue is illustrative of a profound change which has taken place in American politics during the past few decades. Our political issues are losing their traditional sectional characteristics and are increasingly becoming related to questions of nationwide concern, requiring the formulation of policy based on national rather than on local considerations.

Political issues in the past were usually based on regional interests which reflected the economic objectives of the groups dominating each area. Today, as our national economy becomes "homogenized," these regional economic differences are rapidly diminishing. Several of our key farming states are also among our most productive manufacturing states. The distinctions between the onetime rural, agrarian South and West

and the urban, industrial North and East have become blurred, and a recognition of similar aspirations and problems has emerged. These changing economies have established new definitions of regional interest and, therefore, of political objectives. The economic transformation thus has created the basis for national political unification.

No longer is protection against the competition of foreign goods and products the worry only of the New England factory owner; it is now one shared with fellow manufacturers throughout the country. Labor legislation and the regulation of union activities trouble Congressmen from California and Mississippi, as well as those from Pennsylvania and Michigan. An attempt to curtail the activities of the TVA evokes attention from businessmen and public utilities officials in Colorado and Missouri, as well as in Tennessee. An overly abundant corn crop, once the private calamity of the Iowa farmer, elicits cries of dismay from Connecticut taxpayers. Debate over the construction of the St. Lawrence Seaway furrows brows not only among Eastern railroadmen, but among shippers and haulers across the country. Efforts to expand the coverage of unemployment compensation stir both Kansas wheatgrowers and Ohio tiremakers into immediate action.

But it would be dangerous to interpret this increasingly nationwide emphasis on politics solely in terms of economic change. Important as this has been, it is a continuing rather than a completed process; the several regions are by no means as yet identical either in economic structure or in their conceptions of local well-being. Significant political and social developments in this country have also played a part in contributing to the decline of American sectionalism.

ON THE political side, perhaps the most potent influence has been the broadened governmental supervision of business activity. The functioning and malfunctioning of an allegedly *laissez-faire* economy has yielded to federal regulation in almost every sphere of economic enterprise. Prices, interest rates, hours of work and transportation charges, to mention only a few, are no longer determined solely by private groups but are subject to the decisions of a whole host of federal agencies. The steadily lengthening list of these agencies, from the Interstate Commerce Commission to the recently created Agricul-

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ture Stabilization and Conservation Service to supervise the soil bank, serves as an index to the successive fields subjected to federal control.

The introduction of federal control and/or assistance have set into motion forces which have transformed regional problems into matters of national interest. Agriculture and labor are illustrations of this phenomenon. Overproduction of foodstuffs and the fluctuation of farm prices and income were once of direct concern only to the agrarian, just as the hours and conditions of work in factories affected only those in industrial areas. When the federal government assumed jurisdiction, this picture changed. Whatever his original personal disinterest in rural problems, the city dweller, as consumer and taxpayer, found himself underwriting the cost of the farm price support program.

THOSE in rural areas discovered that labor laws and the resultant rise in power of unions not only affected the prices of the goods they purchased but that the scope of such laws was of considerable importance to them as actual or potential employers. The areas of federal intervention, narrowly conceived at the outset, broadened constantly.

A second consequence, perhaps less immediately apparent, has been a gradual change in the symbolism of American politics. Given federal control over freight rates, the railroad can no longer be denounced, in familiar Western fashion, as the "octopus" and the agency of foreign exploitation. Given the Federal Reserve System and the Securities and Exchange Commission, fluctuations in the value of money, a contraction of credit, an increase in interest rates, or a decline in stock market prices can hardly be attributed to the fiendish manipulations of the Eastern, particularly Wall Street, financial combine. Even the favorite bogey of "the trust" has become increasingly ineffective in the face of the regulatory powers vested in the national government and, equally important, the determined efforts of many of our larger corporations to avoid any action which might tend to awaken the old, familiar cry of "down with the monopoly!"

Accompanying this growth of federal control has been a twofold shift of power within our governmental framework. One need hardly argue that Presidential authority and influence has come increasingly to overshadow that of Congress. Representatives and Senators are vulnerable to local pressures and therefore tend to be more representative of sectional interests. The President, on the other hand,

is chosen nationally and heads a political organization encompassing every state. Those hopeful of being elected—or reelected—to the Presidency cannot be identified too closely with any special sectional interest, for they must offer the voter a national outlook. To the extent that Congress enacts the legislative proposals of the Chief Executive, it usually represents the triumph of the national over regional viewpoints.

THE emergence of Washington as the dominant member in the federal partnership has further contributed to the decline of regionalism. Though the role of the states has not decreased, it has not expanded as rapidly as that of the national authority. Where a matter is subject to state regulation, local variations of policy, reflecting differing concepts of sound policy, are possible. When a subject passes under federal control, there emerges a national policy adjusted to regional considerations only, if at all, in terms of administrative detail. This substitution of federal for state authority is usually accomplished by legislative preemption of a policy field, but this can also be achieved by use of federal grants-in-aid. Or, as evident in the controversy over desegregation, it may be accomplished by judicial decision.

Regionalism, whether economically or politically motivated, flourishes where there is physical and intellectual isolation from other areas. Misunderstanding and mistrust are the by-products of a lack of communication and contact. The mobility that is characteristic of American society has done much to break down these barriers and facilitate the cause of better intersectional understanding. Where large numbers in the population have first-hand familiarity with the lives of their fellows in other parts of the country, the older sectional prejudices and dislikes are undermined. It is not always easy to be a partisan New Englander today when one was a Californian yesterday and will possibly be a Texan tomorrow. And, there is the unifying influence of having weathered crises together—World War I, the Great Depression, World War II and the Korean conflict.

AMERICAN population migrations have led to the painful discovery that so-called local problems have an unfortunate way of moving from one state to another. A Maryland employer finds that his production costs reflect the failure of his Louisiana-born assembly workers to acquire a sound primary school education; the inability of one state to provide

necessary health inspection is eventually paid for by increased tuberculosis hospital expenditures in a sister state a thousand miles distant. This also explains, in part, the increased federal concern over education and health.

Also bringing the country and its people closer together are the vast network of roads, the nationally circulated newspapers and magazines, the chains of radio and television stations and their national programs, and the movies.

Yet, two sectional issues are the diehards: equal rights for white and colored, and isolationism. But even these issues appear to be losing their sectional character. For the Supreme Court decisions have lifted the issue of segregation out of the South and into the national limelight. Under this national pressure, the extremists in the South will probably yield to gradual desegregation, though not without protest, and Negroes will take their places alongside whites in schools, parks, buses and polling booths.

Isolationism is a phenomenon of areas heavily settled by immigrants noted for their anti-British and/or pro-German sentiments: the Midwest and Northwestern states. It is rooted essentially in the history of the nations from which the immigrants came. But changing population patterns, the arrival of another generation of voters as well as the emergence of a new enemy are beginning to spell the doom of isolationism as a significant appeal in American politics.

With these trends in sight, one may venture a prophecy. Both of the major parties are concurrently divided within themselves: the Democrats on the question of segregation, the Republicans on the issue of foreign policy. In both cases, the divisive forces represent the lingering manifestations of sectionally rooted beliefs. We can see the countervailing forces operating today. We are aware of the growing efforts of both parties to free themselves of sectional conflicts. We can expect the gradual decline of regionalism in the not too distant future. ■

Farm Productivity

THE AVERAGE farm worker today is raising enough food and other agricultural products to take care of the needs of eighteen other people. This degree of support by a single farm worker is the highest on record, according to the Department of Agriculture. In 1940, a farm worker was able to provide for ten other people. In 1900 he took care of six. Increased mechanization and better farming techniques are among the factors in this improvement.

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AMERICA 1975
SERIES

Electronic computers will help management amass policy-making data and maintain control over vast enterprises

by Richard L. Waddell

INDUSTRY has entered the computer age. Enough has been accomplished in the field of electronic data processing to excite the imagination of those who are charting the course of growth in our industrial democracy.

Scientific computers have long since gained their place in industry. Today they analyze oil fields, indicate how a geological strata should be exploited; they solve aircraft design problems which save thousands of hours of engineering computation—and produce results that would have been otherwise unavailable. Actually, however, the processing of data by computers is the least exciting part of the computer age. Office automation and decision-making contain the elements that enable business to look ahead to a revolution in management.

It is no accident that the birth of the huge corporations which now characterize our economy coincide more or less closely with the rapid development in communications. The telegraph and then the telephone were the threads that wove a company—as well as a country—together.

With these instruments grew the problem that industry is now on the verge of solving: the handling of information once it is transmitted from one point to another. Up to now, the instantaneousness of communication stopped at the end of a telephone or teletype line. At that point it was broken down into hundreds of forms and reams of paperwork, and then cast onto rows and rows of machines, each attended by one or more clerks.

The computer age is changing

all this. This summer, for instance, the Howard Savings Bank in New Jersey began installing an electronic data processing system which eventually will shift the bulk of its standard accounting work onto memory machines. A teller, at any of its branches, can record an individual's transaction on a small key-punch machine; this data is sent by wire to the central office where the transaction is recorded and the necessary information returned to the branch in a matter of seconds. On top of that, the bank management can have an up-to-the-minute record of total withdrawals and deposits, a running balance sheet at any particular moment.

INDUSTRIAL applications such as these are limitless. A company will be able to handle the complicated job of individual payroll accounting on a machine that does all of the calculations in a few seconds, including the printing of checks. One big company is planning an extension of this idea. The magnetic tapes on which the individual accounts are recorded will be sent to Social Security headquarters in Baltimore (which already has applied electronic data processing to its operations) and there the information will be transferred electronically to government records.

Numerous other applications could be enumerated. In essence, they all add up to the replacement of manpower by machines, with a saving in time and money.

BUT there is a far greater role for the computer to play than the mere automating of office work. Ever since the turn of the century, industry has been grappling more and more with the problem of bigness. Greater size has been accompanied by far greater complexity.

A company like Union Carbide & Carbon Corp., for instance, has hundreds of products in one division alone. And each month, UCC researchers introduce two new commercial products in the market. There is no likelihood that this vast outpouring from the laboratories will stop. It will undoubtedly increase.

Business only recently has discovered how to manage such big and complex units. This management technique is called decentralization. It arose from the sheer necessity of devising some means of controlling multiple units and nationwide networks of business. It seeks to push decision-making down to the lowest practicable point in the organization.

Richard L. Waddell is Editor of the Management Department, *Business Week* magazine.

In many companies, this decentralization breaks down the organization by product or market. Each unit becomes a business unto itself, so to speak.

It is easy to understand why decentralization has become the watchword of well-managed companies today. It isn't that management at the top necessarily chose this form of organization. There was no other solution once a company reached a certain size and complexity and internal communications bogged down.

The computer, and the statistical tools of high-level mathematics which it permits, enable the managements of large corporations to retain the reins of power. The glimmerings of what lies ahead were revealed by Sylvania Electric Products, Inc., which recently unveiled its Data Processing Center, built around a Remington Rand *Univac*. Eventually, all accounting and statistical work of the far-flung company will be centered there. Data will pour into it from plants, warehouses and sales offices for interpretation. Don G. Mitchell, Sylvania president and chairman, calls this "administrative automation." It consists of a teletype network of some 18,000 miles tied into a single computer.

Management, of course, insists that such a system will not destroy the "decentralization" that has become a way of doing business in a company like Sylvania. But to understand what the full impact of this "computer revolution" may be on business, we must decide exactly what we mean by decision-making.

BASICALLY, there are two types of decisions: policy-making and operating. Complexities of business dovetailed the two so that top management — where policy logically is made—has had to turn over much of its policy-making to lower levels of management. Even the most fundamental top-level decisions—the allocation of money and resources —have become, to a large extent, the job of the operating people.

They propose their budgets which allocate men, money and objectives. Each operating division or product manager attempts, by the logic of his arguments and the record of his part of the business, to make a case for his requests.

These budget arguments are resolved at the top. But often the decision is based largely on personalities, intuition and a need for action, no matter what the facts are.

All this may be changing. It was only partly a joke when a president of a company suggested that: "The next board chairman will be a *Univac*." That is because

the computer may well play its most important role in this vital area of resource allocation.

The mathematics is there; the speed of calculation is there; and the data is there. When a computing system is in full working order, it will offer management a wide range of alternatives, projections and probable results of any particular line of action.

It is popular to state that computers will not make decisions. But this is only true for decisions which involve the kind of policies that are already highly centralized, and can never be otherwise. For instance, a computer will be able to tell management how to maximize profits over the short-run or the long-run, but it is management at the top that must decide which way it wants it. Further down the line, though, decision-making can easily be taken over by the computer.

Centralization of decisions, therefore, once again becomes possible. It isn't likely that top management, with such a tool, will forego the chance to centralize merely to satisfy an outmoded philosophy of decentralization that no longer meets the needs of the company.

TAKE the case of a fairly simple company like Rayco Manufacturing Co., Inc. With the use of a large-scale computer it has been able to devise means of selecting the best places for new store sites. It also determines, through constant checks and data calculations, inventory policy for each of its independently owned retail outlets. All the retail managers have to do is follow the centrally calculated schemes.

On a larger scale, a big oil company sees the use of computers breaking down the traditional functional bailiwicks of its production, transportation, refining and sales departments. A computer has already simulated a refining operation to determine the optimum product-mix out of any given kind of crude oil. From that point you work back to production and project your transportation requirements. It is only another step for the computer to determine refinery location and sales policy in terms of wholesale and retail locations.

Experts on computers report that today's technology, given the economic wherewithal to do so, can result in a computer running a factory. Why not a company? The top manager, sitting at his desk, can get information on production, sales, future sales and inventories in a few moments. If production is interrupted for a mechanical reason, the computer can automatically reprogram the factory schedule, write reports to cus-

tomers telling them of unavoidable shipment delays and set in motion a calculated plan to minimize the losses from that production interruption.

If technology were put to its fullest use, all this would be possible today. By 1975, the age of the computer will certainly be with us. The implications for our business organizations are far-reaching and challenging.

But they also raise major questions for management: What will be the role of subordinates in the business hierarchy with the emergence of the computer revolution?

Automation of production will, as many have already said, mean a shift of production workers to maintenance people. This is already true, to a great extent, in oil refineries. For the managers, the computer can mean they will become data gatherers, not decision-makers.

DECENTRALIZED authority as we know it today has done more than just solve an intricate communications problem. It has, in its best practice and form, provided a vital sense of participation for many more people in a company than was possible under any centralized form of management. What happens when these decisions are no longer made at the lower levels?

It will be necessary for management to find a new way to give a sense of participation to its employees. It must be understood, too, that management today no longer exercises its authority through traditional rights of ownership. It has groomed the professional manager whose authority rests upon his efficiency.

Those over whom the professional manager exercises authority must agree to it. This makes it imperative, as the rise of labor unions has so well demonstrated, that he achieve agreement on his authority.

In the ranks of management, this authority—or effective leadership—is obtained by permitting participation in final decisions, or by allowing important decisions to be made in the lower echelons. As the uses and abilities of computers grow, more and more of these decisions will become, in a sense, automatic. Here you have the full impact of what may lie ahead for the business leader in the next twenty years.

It will be his job to maintain his authority, not through the exercise of absolute power but through persuasion. He will have to understand leadership in terms of people, not organizations. His job may well become one of personal inspiration on a scale, and in a way, that hasn't been necessarily a prime requisite of modern management up to now. ■

Transportation Moves to the Atomic Age

AMERICA 1975

SERIES

Atomic-powered planes, ships and locomotives usher in a new period of growth for the booming industry

by Frank A. Smith

TRANSPORTATION in 1975 will have moved over the threshold of the atomic age. The atomic engines now in our newest submarines will have proved themselves and in twenty years may be powering new, fast cargo-passenger vessels. Atomic-powered military planes, now on the drawing boards, will be streaming through the stratosphere. Locomotives with smaller, more compact atomic energy plants, may be pulling miles of freight cars from one end of the country to the other.

On the whole, the transportation industry should still be booming twenty years from now. This prediction is based on the post World War II trend which has been well ahead of our actual growth in national output. There is every indication that this growth will continue. By 1975 we may expect to nearly double the estimated 84 billion dollars spent last year for transportation facilities and services. Present developments forecast the changes we can anticipate in this growth of passenger and freight transportation.

While atomic power for buses, trucks and automobiles may not yet be available commercially, experimental models that will have been developed by 1975 can point the way to large-scale advances that should eventually follow.

The visions held by science fiction writers of ribbons of highways amidst the towers of the city and helicopter ports atop skyscrapers will not be completely fulfilled, but may be closer to reality. The 150-mile-per-hour helicopter, however, will have

come into its own as the air taxi. Up to fifty passengers could be carried in helicopter shuttles between airports and downtown terminals, and in short-hauls of 250 miles between cities.

The atomic plane will be too expensive to be used commercially, and will only be the property of the air force. Commercial airlines will be using jet planes for trans-continental and trans-oceanic hops, turbo-jet planes for medium - distance cross - country service, and propeller - driven transports for shorter trips.

Colorful automobiles with nondenting plastic bodies, puncture-proof tires that run 100,000 miles, and economical gas turbine engines should be crowding the nation's highways. Car registrations should increase by slightly more than a million each year during the next twenty years, and we shall have 75 million autos on the road by 1975, compared to 51 million today. This will establish a ratio of one car for every 2.9 persons in the country, not much of an increase over the present ratio of one passenger car for every 3.2 persons.

The vast highway construction program adopted by Congress last month will be extended indefinitely long before the last mile of concrete is laid. Main arteries around major cities in the country will move traffic more freely than today but will still be packed with cars and trucks.

Streamlined passenger trains should be commonplace, and some freight trains will consist entirely of interchangeable cars for rail or highway use. Atomic powered locomotives may be in the experimental stage, but fast service should be provided by diesel and gas turbine engines.

Automation will be in extensive use throughout all railroad systems, both in freight classification yards and on the roads. Welded rails and practically indestructible cross ties should make rail travel smoother and more economical.

The atomic-powered cargo-passenger ships will also employ new cargo handling techniques to speed up loading and unloading and reduce time in port. These faster ships will cut the cost of ocean travel. Trailerships should be in extensive use in intercoastal shipping. Small pleasure craft will abound on inland waterways and along the coasts.

The unseen pipeline will criss-cross the country in a vast network bearing not only oil, natural gas, and gasoline, but also slurries of pulverized coal, wood pulp

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Frank A. Smith is transportation economist with the Transportation Association of America. The views in this article are those of the author's, not the Association's.

and finely ground limestone. Steel pipe may reach sixty inches in diameter, double the present maximum. Smaller lines will be made of plastic. Corrosion can be practically eliminated by special protective wrapping. A few huge endless belt conveyors will move coal and iron ore from the mines to points of consumption.

THE transportation consumer—either of freight or passenger service—will have a wide selection of different types of carriers for his needs. While many companies may still prefer the personalized service of self-operated transportation, the trend should be toward greater use of common carriers because they will be able to fill most of the demands better and more cheaply.

But we can expect far fewer publicly regulated carriers in 1975. Mergers could cut down the number. The trucking field should see the most drastic consolidation, with at least 50 per cent of the 19,000 companies registered with the Interstate Commerce Commission either merging or going out of business. The air, bus and rail fields may also experience a reduction, as carriers with marginal or duplicate operations merge with stronger companies. This consolidation, however, will result in many economies to the companies and lower costs to the freight user and traveler.

The process of merger will not reduce the amount of competition among common carriers. But competition with private carriers should be heightened as a result of the changes in the tax structure to equalize the tax burden among all transportation carriers. In one instance, this would mean the repeal of discriminatory federal taxes on public carriers, removing a burden of 650 million dollars which private carriers do not have. Rigid enforcement of highway safety regulations can prevent corner-cutting to gain competitive advantage. Regulation of common carriers will become more flexible to permit maximum competition with unregulated carriers. At the same time, the existence of an adequate supply of unregulated transportation may enable the common carrier to drop many unprofitable services such as the operation of branch line passenger trains.

THERE will be greater coordination of services by common carriers. More use of "piggy-back" railroad flat cars, carrying trailer trucks, and the loading of trailers aboard ships, are examples of such coordination.

Low-cost rail, bus and air service may get a greater proportion of passenger traffic even though the private automobile will con-

tinue to dominate the passenger field. Business travel by car will be sharply reduced as businessmen take a train or plane to their destination and then rent an automobile for local travel. Taking into account the expected increase in population to 220,000,000, the public forms of transportation can probably double their present business by 1975.

Even local transit industries, long plagued by steady traffic losses to the private automobile, which held 88 per cent of the passenger market in 1955, may see better times. Rigid no-parking regulations on downtown streets, the widening of the streets, and by-pass routes for through traffic will help to clear the roads for buses in the major cities. Special express lanes for the buses may speed commuter service to outlying parking areas.

The barring of automobile parking on crowded downtown streets could also help the railroad commuter business. Some railroads may even move their terminals to low-tax areas, far from the crowded downtown district, and use fast shuttle buses to pick up and disperse passengers. Moving sidewalks may transport pedestrians in and around terminals, sports arenas and shopping districts. The monorail, which can move cars at high speeds on a single rail thirty or more feet above the ground, well above the heavy traffic, will also be in use in a number of cities.

Truck traffic on the highways will be doubled as truck registrations increase to an estimated 20 million by 1975. And as industry decentralizes and the city population expands to suburbia, this truck traffic should form the lifeline for retail and other commercial establishments moving out to service the suburbanites.

EVERY major form of transportation will be handling more freight and passenger traffic. A conservative estimate places the amount at two trillion ton-miles for intercity traffic alone, 60 per cent above present levels. On a relative basis, however, truck and water carriers will grow faster.

The expansion will lead to many problems. The major one is the problem of financing the modernization of highways, waterways, airways and airports. Current trends point to the growth of the general application of user charges for publicly provided transportation facilities. The present tax on gasoline and tires to help finance the new federal highway construction project will be extended to pay for future highway projects. Barge and small craft users of waterways plus airlines and other private users of airways and airports will be taxed

to pay for the construction and maintenance of these facilities.

Another major problem created by the expanding transportation age is the control of traffic on the highways and in the airways. The Civil Aeronautics Administration will be required to specify airlanes to be used by thousands of planes in the air daily.

The increase of auto, bus and truck traffic on the roads will call for more intensive traffic engineering. In the cities, restrictions imposed on the use of private automobiles may barely ease the congestion problem. City traffic planners will be forced to work with transportation services to help them improve their systems. Any improvement in public transportation would increase the number of passengers and decrease the number of car users.

On the highways, policing could continue to be a problem. The greater horsepower and speed of the new cars will establish the need for greater traffic control.

Yet, these problems will not deter the growth of the transportation industry. Nothing, except depression, will. For the system of distribution in the nation today depends entirely upon transportation. And, as manufacturers and farmers produce more and more goods to meet the rising demands of the people, transportation will be called upon to deliver the goods. The nation depends upon the expansion of the transportation lifeline to insure the continued growth of the economy. ■

Motoring in 1955

THE NATION'S worst automobile accident toll in history was recorded in 1955. Traffic deaths totaled 37,800, compared with 35,500 in 1954. Traffic injuries were 2,158,000, as against 1,960,000 the previous year. Excessive speed by drivers was the most dangerous driving mistake, the Safety Service of The Travelers Insurance Companies reported. Speeders accounted for 12,700 deaths and 702,560 injuries. Most fatalities occurred on weekends: 8,320 on Saturdays and 7,410 on Sundays. Weekend injuries were: 410,020 on Saturday; 356,070 on Sunday. Other statistics issued by the Safety Service warned: Three out of four accidents happen in clear weather on dry roads; Saturday is the most dangerous day of the week to drive; 4:00 to 8:00 p.m. are the most dangerous hours of the day to drive. Conclusion: "It is brainpower not horsepower; the power to steer and brake; not power steering or power braking which is the ultimate solution to the safety problem."

Is Gold the Root of All Money?

Many people believe it is, yet modern money systems exist without it

by Sidney Weintraub

IT HAS often been thought that the gold hoard at Fort Knox represents the gold equivalent of the amount of money in circulation in the U.S. Actually, it doesn't and couldn't. On top of this there is the belief that money must be gold or silver, even though most people have never used a gold coin in buying what they need, while the silver pieces they use are incidental to the dollar bills and checks they write and hand out.

The total currency and checking accounts in the United States today amout to some 140 billion dollars. The U. S. Treasury Department gold stockpile, including the Fort Knox cache, is close to 22 billion dollars. This fact alone makes it obvious that the country's monetary system is not wholly dependent on gold.

But to understand how our monetary system operates in practice, it is necessary to know about the various forms of gold standards.

The gold coin standard creates a money supply that consists of gold coin or a currency that can be instantly redeemed into gold coin at the request of the bearer. The monetary authority stands ready to buy and sell gold at a fixed price. Under the law prevailing from 1900 to 1933, the Treasury bought and sold gold at $20.67 per fine ounce. A gold standard law thus acts to fix one price while all other prices adjust to it.

The gold bullion standard enables the Treasury to deal in gold at a fixed price, too, but only in certain specified amount, such as a 400-ounce bar at $14,000 in some countries. Anyone with $14,000 would be free to buy the gold.

Since 1934, we have operated on what is generally called a "modified gold standard" under which

the price of gold has been fixed at $35 an ounce. The Treasury pays this price only to those mining gold, or banks and firms importing gold and sells at this price only to those few institutions with legally recognized needs for gold. This limitation on the sale of gold, except for certain specified purposes, is the main modification of the past gold coin standard.

It is commonplace to describe this modified system as a "managed" gold standard. Federal Reserve policy manages the total currency and checking accounts with a sharp eye on the relation of the money total to the stock of gold held by the Treasury. All recent monetary systems have been "managed" in this way, particularly since the birth of central banks charged with the control of the money supply.

Today, no country uses gold as money; yet all use money. Money today consists of paper bills for larger denominations, token coins for small payments and, increasingly, checking accounts.

But why should anyone relinquish valuable goods and services and accept pieces of paper which, in the absence of its use as money, would have little or no value? "Money is as money does" is one way of describing this phenomenon. So long as we know that others will accept the same pieces of paper, we will take them. So long as we know that the pieces of paper will buy what we need and what, we will use them.

Why, then, are some people concerned about a gold standard? What are the main arguments in its favor? The first is that with an international gold standard we have a world currency against which foreign exchange rates can be instantly computed. Such a currency would obviously facilitate international trade. Secondly, it is contended that a built-in defense against inflation and currency over-issue, of which the world has had its fill in past decades, is established when gold is used to back up money.

On the first point, there is no doubt that stable foreign exchange rates facilitate and promote foreign trade. But this advantage comes from stable foreign exchange rates, not from gold as such. And if such stability can be secured without the adoption of the costly gold standard, so the reasoning goes, the same ends can be served. Substantially this has been the objective of the International Monetary Fund through which member countries pledge to minimize the fluctuations in

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foreign exchange rates without obligating themselves to a return to the former gold standard.

The second argument, that gold constitutes a guard against inflation, must be taken with a grain of salt. In the final analysis, this is a political question, one of confidence in the capacity of governments to manage money intelligently and honestly. Inflation will threaten nations as long as military budgets and war persist—as they will until the threat of war itself disappears—and as long as nations seek to accelerate the pace of economic development beyond that which can be supported out of savings. Inflation cannot be prevented by a mere institutional reform of the monetary system which still entails monetary management and money control.

PROPONENTS of gold also argue that monetary systems would work better if all citizens had access to gold and could acquire it at the Treasury or central bank. But a gold standard is an expensive standard. To operate it at all, the central bank must own a gold stock of several hundred thousand dollars, even in the case of a small country. If a country possesses no gold mines, it would have to stop importing finished consumer goods, necessary raw materials or valuable tools and equipment needed for industrialization to acquire such a gold hoard. Part of its exports would have to go toward the purchase of gold. In view of its position in world affairs, this would require the United States to import more than it exports. (For this reason alone, the worldwide restoration of gold is unlikely to win many adherents in the United States.)

Consider the cost to economically poor countries: they would be yielding up their choice of valuable real imports, which could improve the status of their people directly, in order to obtain a metal to serve indirectly as a medium of exchange. It would be hard to convince them that a shipment of gold had a higher priority in economic development than automobiles, fuel, medical supplies or heavy equipment.

Besides, as we have already pointed out, a gold standard would still be a managed standard. Why assume heavy costs in order to pursue the same general ends of management? By itself, the possession of gold stocks would accomplish no miracles. It could not prevent monetary chaos when impatient government administrators are unwilling to taper their economic program and are lax in taxing adequately to support their budgetary activities without inflation.

In any case, there would be no point in adopting a gold stand-

ard until the "balance of payments" problem, caused by the tendency of many countries to import more than they export, is solved. To pay for the swollen stream of imports, gold would have to be released. If, in the haste to industrialize, the balance of payments problem persists, then a gold standard would have a shaky start and could not endure. On the other hand, if affairs can be so conducted that the balance of payments is kept from deteriorating, with imports largely matching exports and the remainder covered by international loans, then the gold standard is superfluous. The prevention of a persistent balance of payments deficit for countries with a limited list of exports and an extensive demand for imports thus goes deeper than an initial possession or lack of gold.

Another objection to the gold standard is that it is a "fair weather standard." That is to say, it works well when economic conditions are favorable, at which time almost any system would be satisfactory. However, when adversity threatens, the gold standard is invariably discarded. This has been the experience of the past, exemplified in wartime in our own country and elsewhere, as well as in the universal abandonment of the gold standard in the Great Depression of the 1930s.

Thus, it is argued, if in bad times we have to resort to "judicious management" of the monetary system, why not extend the management into ordinary times when important descisions of monetary control do not have to made? Why hold a costly gold reserve which is never really used? The fact that it is held by the central bank indicates that the citizens do not want to buy it and they prefer to buy more useful and necessary commodities. And when they do want it in quantity, and the rate of depletion of the central bank stock becomes rapid, the standard is dropped and the remaining gold locked away—until another day at which time it will be made available when nobody wants it! This constitutes one of the paradoxes of the system. It is like boasting of the skill of the safety man on our football team and then taking him out of the game whenever we suspect that the opposing halfback will break into the clear.

THE annual production of gold in the entire world today is somewhere near a billion dollars. In the United States alone, to allow for economic growth without inflation or deflation, an annual addition of about eight billion dollars to the money supply is required every year. In time, this might call for a reduction of gold requirements as a basis for note

circulation and deposits. But once the gold standard has been diluted to a fractional money control, why not go all the way and dethrone gold entirely? This has been the typical decision in almost every country but our own. There has been no general return to the gold standard since the departures of the 1930s. Our own steps back, feeble as they have been, have been firmer than those of other nations.

As a practical matter, a worldwide return to the gold standard is unlikely now or in the foreseeable future. Recently, the Money and Credit Committee of the National Association of Manufacturers stated that "the coinage and circulation of gold would not improve the functioning of the money and credit system. . ." This is a far cry from the position taken by businessmen fifty years ago when a political battle over adoption of the gold standard split the country and dominated the campaign between William McKinley and William Jennings Bryan. Even if a return to the gold standard were to take place, there is no assurance that it would be permanent. This raises the final question: If it is not necessary to fix the price of gold in order to establish a monetary standard, what do we mean by a monetary standard?

A monetary standard refers to the *system* of arrangements which controls the supply of currency and bank deposits in order to govern the value or purchasing power of money. Under a modern gold standard the fixing of the price of gold would only be *part* of the network of regulations designed to manage the value of money. Since the money supply is destined to be subject to human guidance, it is necessary that it be managed well to foster maximum output and employment, and to maintain price stability. It is to these ends that central banks everywhere, and the Federal Reserve System in our own country are dedicated. ■

Gold Nuggets

South Africa, the largest known producer of gold in the world, dug up 510 million dollars worth last year. Canada produced 159 million dollars and the United States mined 66 million dollars worth. The Soviet Union, which has extensive gold mining operations, does not reveal its production. The Board of Governors of the Federal Reserve Board reported that the U. S., at the end of 1955, held 21,753,000,000 dollars worth of gold. The United Kingdom, with the next largest gold reserve, had 2,120,000,000 dollars worth. Switzerland, suprisingly, ranked third with 1,597,000,000 dollars.

Bridey Murphy Went Thataway!

by Jean Watson

Her ghost is arousing the ire of physicians working to establish the medical value of hypnosis

WHILE the public at large may be enjoying Bridey Murphy's story, the craze it has created is a serious matter to a significant number of physicians. In the opinion of these physicians, such a craze can set back the understanding of hypnosis as a valuable therapeutic tool further than Bridey's nineteenth century Ireland.

Now, as in the past, the melodramatic haze which has arisen around hypnosis tends to obscure the serious efforts to evaluate the medical potential of this phenomenon.

Hypnosis has a long and ambivalent history; throughout, it has been presented either as a method of treatment offering new hope for suffering mankind or as a mystery understood only by masterminds and scorned by orthodox medical groups; or, again, as a sort of back door to the occult world.

Not until World War I, when battle-fatigued and shell-shocked soldiers were daily emergencies, did hypnosis secure a significant medical following.

In the last thirty years there has been a growing membership among the pro-hypnosis groups, particularly in Germany and Russia and, more slowly, in the U. S. Today the reputability of hypnotic practices is being defended by an increasing number of psychiatrists, psychologists, obstetricians, gynecologists and dentists.

Reflecting this growing interest is the number of serious clinical studies on hypnosis being reported in official medical journals.

Early in 1955 the *British Medical Journal* carried a report of a

subcommittee appointed by the Psychological Medicine Group Committee of the British Medical Association. After an eighteen-month study, the committee said that while there was a need for further research, hypnosis is valuable in psychotherapy, useful as an anesthesia for surgical and dental operations and as a pain reliever in childbirth.

In an editorial commenting on the report, the *British Medical Journal* said: "For the past hundred years there has been an abundance of evidence that psychological and physiological changes could be produced by hypnotism which were worth study on their own account, and also that such changes might be of great service in the treatment of patients."

Among the many physiological changes which the *British Medical Journal* refers to are the primary ones: the sleep-like brain waves which can be induced by suggesting sleep to hypnotic patients; the altered pain sensibility; the changes in temperature perception; and the recorded variances of basal metabolic rates.

The psychological changes, however, are not as easily measured or defined except in terms of the uses which can be made of them in patient psychotherapy, and in drawing out the unconscious ideas and feelings of patients in the search for more objective diagnostic techniques.

Still, even with its old, old history—many anthropologists believe that hypnosis was the beginning of medicine—there isn't a definition of hypnosis which is unconditionally accepted by its proponents. The experts point out, however, that there is still no definition of electricity—this phenomenon, also, can only be described.

Probably the most commonly accepted description of the hypnotic state is that of Dr. Milton V. Kline: *an altered state of consciousness within which the capacity to respond to sensory and motor stimulation and to organized behavior transcends normal voluntary capacity.* This explains one phase of hypnosis. Hypnotic induction is another matter, and another phase.

OBSTETRICS, gynecology, psychiatry, dentistry, analgesia—these are fields traditionally interested in and familiar with the value or potential value of hypnosis. There is, in addition, a growing interest in hypnosis among other specialists.

A group of Texas doctors reporting in a recent issue of the *Journal of the American Medical Association* told how they used

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hypnosis as a weapon in the prolonged battle to keep severely burned patients alive. Hypnotherapy served not only as an anesthetic, but through hypnosis the doctors were able to stimulate tremendous appetites in their patients and to get them to exercise painful parts.

And far afield from burns, is the report in the *New England Journal of Medicine* of hypnosis being used to stop a cough which had persisted for eight days and was likely to cause the death of a 14-year-old girl.

The use of hypnotherapy in the treatment of a multiple-sclerotic patient by Drs. Kline and Arthur Shapiro of the Long Island University Institute of Research shows how hypnosis may be employed to obtain reliable, reproducible results in determining the effect of a new drug, a field in which results are too often distorted by the subjective variable of the patient's state of mind.

The over-all disability of a multiple-sclerotic patient, they point out, depends both on the extent of the organic lesion and on the manner in which the patient uses, or fails to use, the resources available to mitigate the damage.

For example, one day a multiple-sclerotic patient may show 90 per cent disability and the next day only 60 per cent loss of function. In the case studied, for instance, the patient had been unable to walk without a cane. Under hypnosis, however, the patient discarded the cane and walked freely. The more accurate evaluation of the patient's actual capabilities, made possible under hypnosis, can serve as a standard of performance in appraising the effect of a new drug. In this case, if the patient had started walking without a cane when given a new drug, the apparent improvement would have been incorrectly ascribed to the effect of the drug on the organic lesion rather than to a change in the patient's attitude toward his disease.

The observations of Drs. Kline and Shapiro suggest that science now has a method of eliminating the variable of the patient's state of mind, the common stumbling-block in evaluating the therapeutic value of drugs. This would place research developments in mental health, in diseases like multiple sclerosis and in psychosomatic medicine on firmer ground than at any time in the past. ■

War Against Disease

MAN'S MAJOR DISEASES will be attacked by the Veterans Administration through a stepped-up research program. The research areas are: mental, nervous and brain diseases; heart and artery diseases; cancer and leukemia, and the problems of aging.

The tug of war between profit-minded peasants and collective-minded officialdom has resulted in the stagnation of Soviet agriculture

FARMING: Russia's Achilles' Heel

by Murray Polner

NOT LONG AGO several men set out from a collective farm near Moscow on a secret mission. Their objective was to buy up enough food in Moscow's retail market so that their collective farm production quota might be met. They were discovered and apprehended. The incident may have been forgotten had not Soviet Russia's most loquacious arbiter on agriculture, Nikita S. Khrushchev, reminded a Communist party gathering of it. What bothered him was that this was not an isolated incident; it had "happened too many times."

This attempt to cheat on official targets, and the accompanying censure, served to magnify Soviet Russia's greatest weakness: the stagnation and failure to progress in agriculture after thirty-nine years of Communist rule. The simple truth is that with almost two decades of total collectivization completed, the output of grain—the single most important Soviet foodstuff—is no higher than during the late 1930s. More butter was produced in Siberia before World War I than today. Livestock figures, especially of hogs and cows, are far below the precollectivized totals, with nearly nine million fewer cows in 1956 than in 1928. Milk yields per cow are abysmally low, only from 2,200 to 2,360 lbs. compared to 5,300 to 7,000 lbs. in the United States. Even the latest government-sponsored palliative — the plowing up of millions of acres of virgin land in Central Asia and Siberia—is currently running into trouble because of meager results and bad planning. This, then, is the dismal picture of Soviet agriculture. What, it may be wondered, is at the root of its

failures and difficulties?

Khrushchev has complained repeatedly that agricultural output has gone up only 10 per cent since 1940, while industrial expansion has doubled. This uneven growth has helped put Soviet agriculture in its critical position today. An inordinate stress has been placed on heavy industry. The corresponding de-emphasis of the light industries has badly hurt the peasant, who, at the same time, is required to deliver a certain quota of foodstuffs to the state without receiving equivalent manufactured items in return. All this time the farms were able to supply a fairly constant amount of marketable produce for state needs. However, the fundamental problem for the Russians has been the lack of diversity in their foodstuffs and the inability of the peasant to keep his output abreast of the rapidly expanding population.

The European peasant has generally been a conservative and individualistic factor in history. In Russian society he is even more so. It was to Malenkov's credit that he recognized the general dissatisfaction on the collectives and tried to find some solutions. During his brief tenure he introduced material incentives—lower taxes, the reduction of required deliveries to the state, allowance of more privately owned livestock—that were highly novel but markedly insufficient. There was also a concomitant rise in consumer goods production. His successors decided the best way to grow more food was to increase the yield per acre by *ukase*, if need be. This was sugar-coated with some additional incentives. State purchase prices went up and compulsory deliveries were reduced. Farm incomes are now higher than ever and nearly all fresh meat and vegetables, recent foreign travelers have observed, are peddled on the peasant free market.

KHRUSHCHEV'S pet idea had been aimed at solving the entire problem with one sweeping move. He proposed the establishment of "agro-cities," or super-collective farms run like factory assembly lines. This concept was in vogue for a while and only foundered on peasant opposition, and some official doubts. Peasants were to be brought together on gigantic farms, given highly specialized jobs, divorced from their village loyalties and private plots and placed more firmly under the aegis of the party. A pilot farm was organized in the early fifties in

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Khrushchev's ancestral village. An official commentary on the experiment appeared in late 1955 and one million copies were distributed in order to popularize the abortive scheme.

BASICALLY, the peasant objects to these schemes because he isn't permitted to profit from his own labor. Where he is able to make his labor pay, he produces more. Only about 3 per cent of Soviet Russia's cultivated land is not collectivized and is part of the permitted private plots. Yet, this tiny 3 per cent turns out almost 10 per cent of Soviet Russia's produce in terms of value. To guarantee this production, and perhaps extend it, Moscow has reintroduced liberal incentives. Still, restrictions are stringent. The obligatory "labor-days"—which must be devoted to collective work and for which the tax climbs 50 per cent for the nonparticipating member's household—is still the law in rural Russia.

The peasantry is also hampered by the political situation. The machine tractor stations which "own" the tractors and combines and "service" the collectives, are paid by the latter in kind. These stations have their own party cadres who are urged by Moscow to "intervene actively in collective life."

This has given birth to a vast rural bureaucracy, or, as they were characterized by Khrushchev, "human filth." On one occasion he derided a farm of 255 persons which had 51 administrators and 11 in service trades. It was a special farm, he complained, because "they themselves consume all they produce." The administrator who doesn't administrate and the farm specialist who never leaves his office have since become an accepted part of collectives. Nonetheless, the inexorable political theory of communism, while frequently recognizing this abominable situation, considers strict political controls far more vital than the replacement of inept farm bureaucrats, or their elimination. Last year Moscow dispatched 30,000 farm functionaries to collective posts. The criteria for their selection, according to Khrushchev, was political rather than farming experience.

SUCH emphasis has led to notable failures. The most recent was the scheme to plow and reclaim the virgin land of Kazakhstan, the Volga Valley and Western Siberia (an area greater than one-half the entire region under crops in Western Europe). Khrushchev admitted that the idea was conceived in haste and "not quite sucessfully" implemented. The purpose of the plan was to establish the foundation of

future agro-cities. But the climate was generally too cold and forbidding, the topography often bleak and marginal and the rainy season painfully brief. The 1955 harvest, the first major result, was a failure because of persistent drought, and after this year further expansion will be curtailed. New soil will be plowed up only if it assures a high, stable harvest and needs only a modest capital outlay.

THE heavily advertised corn and grain schemes have also gone awry. Corn was indiscriminately planted on party orders. Last year's results were so poor that in some places the cost of the harvest was not met. Grain prices were not lowered as is the custom after each harvest, and this may indicate that 1955 production was so low that stockpiles are being used to fill consumer requirements.

All the panaceas are complicated by Soviet Russia's labor surplus (as compared to the United States' commodity surplus). Almost 40 per cent of the Soviet working population is needed to feed its people; in the United States 12 per cent can do the job. Foreign visitors are constantly startled at the abundance of rural labor and the relative lack of agricultural mechanization. One observer noted that machine tractor stations he visited, serving farms of from 10,000 to 20,000 acres, often had less mechanical equipment than an American farm of 1,000 acres.

Moscow is now concentrating on yield per acre instead of massive production and is seeking a more efficient organization of labor and research on the farm. The Soviets have also decided to entice the peasantry with even more liberal material incentives, although consumer goods production is still comparatively small. The official goal for 1960 is a doubling of farm output and a rise in manufactured items for the ordinary citizen.

Unless there is a sizable increase in agricultural production, there can be little increase in industrial production. Industrial workers can not subsist for long on the typical peasant's diet of black bread, borscht and potatoes. They need more substantial fare to continue working at the pace demanded by Soviet authorities and their goals.

The inadequate food supply, the Achilles' heel of the Russian economy, is a constant source of discontent among workers in the Soviet Union and its satellite countries. The recent demonstrations for bread led by steel workers in Poznan, Poland indicate that the discontent is at the breaking point. ■

ECONOMIC AID: SOVIET STYLE

by Egon Kaskeline

It has won over many pro-West allies with less money and in less time than the U. S. foreign assistance program

There is probably less danger of a shooting war today between East and West than at any time since the end of World War II. This happier state of affairs reflects the changes in Soviet "cold war" tactics. Most significant is the shift from a strategy of military pressure through peripheral wars and armaments buildup to a strategy of economic competition for allies.

Western observers have estimated that the total Soviet outlay to date for aid to other countries is less than 15 billion dollars, very little when compared to the 55.8 billions the United States has spent since the end of the war. However, a reliable comparison is difficult for three reasons. First, Soviet aid figures are given at the official ruble rate, although the actual purchasing power of the ruble falls far below the nominal value. Second, the Russian figures are not related to an annual budget as are the American figures, but include credits which extend over several years. Third, the Russians do not specify the dominant amount of barter and trade but lump them under "aid."

But if its size is somewhat difficult to determine, the major objectives of the Soviet economic offensive are more readily understood. Within a program which might be termed the reverse of the U. S. "containment policy," Soviet Russia is trying to win over the uncommitted countries on her borders, such as Afghanistan. At the same time, economic ties with the captive nations of Eastern Europe and with the Communist countries of Asia are being tightened, and non-Communist countries are being approached with offers of economic or military aid, as in Egypt, often in direct competition with the

United States, in an attempt to destroy the anti-Soviet bloc.

A LOOK at the geographic distribution of Soviet aid quickly confirms these objectives. Afghanistan, Finland and Iceland, for example, were the first non-Communist recipients of Soviet aid.

Shortly afterward, Pakistan, Iran and even strongly anti-Communist Turkey were offered financial and technical assistance.

Until 1955, nations of Eastern Europe, which form a buffer zone between the Soviet Union and Western Europe, received virtually all available assistance from their "big brother" in the East (although, because of different pricing for materials sent and received, such "assistance" benefitted Russia more than her satellites). Then China and the other Asian countries suddenly became the focal point of the Soviet economic offensive. Although Communist China has been receiving 20 to 25 per cent of the aid going to the Far East, the other Communist countries—North Korea, Outer Mongolia and Communist Vietnam—are regular recipients. More recently, the Kremlin has been soliciting the Asian neutrals, and India, Burma and Indonesia have already accepted Soviet aid in various forms.

In the Middle East, Russia has, in addition to offering economic aid to Egypt and Jordan, made several much-publicized arms and military shipments. Both the economic and military trade moves are part of an attempt to penetrate the Arab world.

The growing list of countries accepting technical and financial aid from the Soviet Union attests to the success of the program. It has enabled the Soviets to win the friendship of several countries once considered pro-West, even though the amount spent by the United States dwarfs the Soviet program past and present.

HOW have the Soviets been able to accomplish so much with so little? A study of Soviet methods provides interesting lessons for the administrators of American aid programs.

The Russians have, for example, recognized the fierce national pride and self-consciousness of former colonial or dependent nations and the general eagerness to raise economic levels quickly to those of older countries by emphasizing Asian industrialization. American experts, in contrast, feeling that only a sound agriculture can support new industries, are reluctant to promote extensive industrialization in predominantly agricultural countries.

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The Soviets have established the practice of negotiating aid agreements on a basis of complete equality between "business partners." This semblance of equality is highly valued by nations such as India which still feel the real or imaginary scourge of colonial rule. Approximately one-third of American aid to India has taken the form of outright gifts, including one of 700,000 tons of steel. The Russians, on the other hand, negotiated for weeks on the price to be paid by India for Russian equipment for India's new steel mill. The Indians *prefer* the Russian approach.

Similarly, the Russians have been careful not to appear condescending in their offers of technical assistance. The country in need of technical assistance soon finds itself host to an army of American experts, all of whom are paid by and report to the United States. The Russian expert is hired by the recipient nation.

IN addition, the Soviet Union enjoys a peculiar advantage when dealing with the needs of primitive economies. Thirty years ago conditions in a large part of the Soviet Union were similar to those prevailing today in underdeveloped territories. Her industrial centers are relatively new, which gives the Russian expert a closer knowledge of the problems of rapid industrialization.

But Moscow negotiators have also been particularly successful in promoting their objectives at the expense of American diplomatic mistakes. Early in the postwar period, the United States went on record demanding the "liberation" of dependent nations. However, in their day-by-day dealings with the leaders of the new nations of Asia, for example, American representatives frequently have seemed to sympathize with their former rulers.

Another diplomatic error is reflected in the growing apprehension of foreign leaders, again especially in the Asian countries, toward the increasingly large proportion of military aid from the United States. In the pre-Korean war years, military aid made up an almost negligible part of the assistance sent to Asian countries. With the outbreak of the Korean war and the later establishment of the Southeast Asia Treaty Organization (SEATO), the ratio of military to economic aid changed radically. Today we find direct military grants of two billion dollars as against about 600 millions for economic aid in the 1956-57 program for U. S. assistance to Asia. This only feeds the widespread fear among the neutral nations that by accepting American aid, they are committing themselves to fight in the Western

bloc. Of course, the Russians also offer military equipment, but they are careful not to make it a part of their economic aid program.

By avoiding the role of philanthropist, the Soviet Union shrewdly allocates economic aid on the basis of propagandistic value. When the Russians shipped 2,000 tons of agricultural machinery to India recently, it was concentrated on one 30,000-acre government model farm. It was unlikely that the Indians could remain unimpressed by such a large array of tractors, combines and other farm machinery.

In Afghanistan, the U. S. has been financing the country's biggest irrigation project in an undeveloped southern area, which, it is hoped, will eventually become Afghanistan's most important agricultural community. The Russians, however, are building grain silos and factories near the Afghan capital of Kabul.

The United States in the past has spent millions of dollars in India, Burma and other Asian countries to relieve suffering from famine, floods and other calamities and to foster economic growth. But the Russians, having concluded a strict business contract, although on generous credit terms, are building India's biggest steel mill at a cost of 150 million dollars.

How much further the Russians will go in their economic aid program depends upon the growth of their industrial capacity and their willingness to sacrifice part of their needed capital equipment to underdeveloped nations.

THERE can be little doubt that Soviet industrial capacity is growing. Today the Soviet machine-tool industry is outproducing its American counterpart. By 1960, according to a survey sponsored by the United Nations Economic Commission for Europe, the Soviet Union will match the U. S. by devoting 60 to 65 million tons of steel annually to the production of capital and defense goods.

Its willingness to supply foreign needs at the expense of its domestic requirements is another matter. Last March, the Soviets agreed to equip 211 industrialization projects in China. This commitment probably will not permit the Russians to extend their aid very far in other directions.

But no matter how far the Russians find they are able to go, their economic aid programs present a challenge to similar American programs. They have ushered in a new "war" of economic competition which may well prove a boon, for the time being, to underdeveloped nations. ■

Economics Is News

Do newspapers, news magazines—and the reading public—devote adequate attention to developments in this vital field?

by Harold Klein

To quote a leading financial columnist: "The demands of the reading public have changed along with the economy of the nation, and business news editors are attempting to keep pace."

Once the exclusive domain of the professional investors, the financial section today caters to a more diversified audience. Its pages are brighter, its stories written in simpler language, and there is a new emphasis on interpretative reporting.

The New York Times reflects this development, devoting more space to news of business and finance than to any other category. *The Times* carries a daily average of sixteen to eighteen columns of local news, nineteen to twenty-one of foreign news and nineteen to twenty-one of national affairs. Business news, however, averages forty-five to fifty columns daily.

Information of general economic nature is, of course, not limited to the financial pages. News of strikes and foreign fiscal developments appear outside of the business section, often on the front page.

In addition to granting more space to business news, financial editors are striving to arouse greater reader interest by allotting more attention to background details, long-term trends and personalities rather than straight news accounts and public relations department handouts.

The same conditions exist in the nation's news magazines. During May and early June of this year *Time* magazine devoted an average of fourteen columns a week to its business section. During the same period five years

ago, however, it carried an average of only ten columns per weekly issue. Moreover, five years ago the contents of the financial and business sections of *Time* were quite different from what they are today. There was little or no emphasis on interpretative reporting and feature news. Current issues contain analyses of business problems, feature presentations and capsuled news items.

These new editorial approaches to economic and financial information were adopted because, in many ways, business as well as other phases of economics is bigger news than ever before. But why?

In a recent report on "Economics in the Press," the Council for Advancement of Secondary Education notes that "economics plays a dominant role in our affairs, affecting our lives at every hour." Taxes, prices, interest rates, wages, social security, credit—all these are of vital concern to the individual.

ADDITIONAL responsibility for adequately disseminating economic information has been placed upon the various news media by the growing size and complexity of the economy.

As the Council report notes, "With a gross national product of 387 billion dollars for 1955, the booming American economy has reached an amazing height and a bewildering complexity. American productive genius, operating in a climate of freedom and with unexcelled human and physical resources, has brought us to new levels of prosperity and plenty. But abundance, together with the vaulting standard of living it makes possible, is not to be enjoyed without cost or effort. A massive economy such as ours carries with it its own imperative demands—in information, understanding, responsibility and intelligent action."

THE report finds that newspapers, large and small, daily and weekly, provide readers with an abundance of economic news. But it also finds a lack of understanding by the average reader of such news. This "economic illiteracy," the Council says, is due largely to the "haphazard" economic education of high school students. Fewer than 5 per cent of high school graduates, the report discovered, ever took a one-semester course in economics.

The task of gathering and reporting economic news is shared with the press by the public rela-

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Harold Klein, news writer with the Office of Information Services, New York University, has devoted considerable time to the study of economics news coverage in the daily press around the country.

tions departments of business and industry whose press releases are still the source of much of the business news carried by both newspapers and news magazines. But to an increasing extent they deal with more than product publicity. Current public relations programs are designed to present the company as a good employer, a good buyer of local goods and services, a good taxpayer, a good contributor to charity and a desirable corporate citizen.

In addition, there are broader goals. General Electric, for example, puts them this way: "The Company aims to go much further, and in association with other local businessmen to promote further understanding of our free system of incentives and competition. It also seeks a fuller development by local businessmen of standards of economic performance and good citizenship in directions desired by the community."

In today's economy, with new records of employment and production and a growing interest in business and finance, there is no shortage of economic news. Donald Rogers, financial editor of the *New York Herald Tribune* tells us, "There is never a day when we don't have too much news." The problem faced by the editors is more one of quality than of quantity—how to fit the best and most interesting material into the space available.

But even with increased interest in economic news and with better presentation, there still remains a large potential audience that does not avail itself of this information. The editors may be playing to a larger audience than previously, but it's still too small a portion of the total readership. The remedy could be found in a continued emphasis on quality—interpretative reporting and a determined attempt to relate the economic news more fully to the economic situation and interest of the individual reader. ■

The Mass Book Market

MORE THAN 200,000,000 copies of paperbound books were sold in the United States in 1955. Priced from 25 cents to 75 cents, the books were displayed and purchased at about 100,000 outlets, principally newstands, drugstores and stationery stores. Seventy per cent of the 1,200 books published during the year were reprints of books originally published at $2.50 or more in hardbound editions. In the last 16 years, close to two billion copies of 12,000 books have been sold in paperbound editions.

Hoyt C. Hottel

Director, Fuel Research Laboratory
Massachusetts Institute of Technology

Science Explores A New Frontier: Solar Energy

Q *Professor Hottel, there has been a great deal of discussion lately concerning energy needs and resources in the United States. Most of this discussion, however, has been in terms of conventional fuels, power sources and atomic energy. Very little has been said about solar energy. How would you account for that?*

A I suppose the answer is that solar energy is still very far out of reach. When Godfrey Cabot gave MIT funds to be used to further developments in the solar energy utilization fields, he specified that the funds be so used for *the first fifty years.* After that the Institute could spend the money as it pleased. This was a measure of his realization that the problem was difficult. The plain facts are that we do not have any very sound economic uses for solar energy today.

Q *How about the solar battery developed by Bell Laboratories?*

A I am sure that the Bell Telephone people would be the last to claim that their battery as presently constituted is adequate. It represents, of course, a remarkable achievement, with an effiiciency that is around 11 per cent. In other words, 11 per cent of the incoming solar energy is available as useful energy in the external electric circuit. I think the Bell people would agree that they can hardly ever expect to exceed 25 per cent efficiency.

Q *If it can't collect energy efficiently, can it do so cheaply?*

A No. The cost of these batteries is extraordinarily high, so high that power from this source comes to many times the cost of power

from a dry cell. Dry cell power costs about 15 to 18 dollars a kilowatt hour, while six mils per kilowatt hour is a typical industrial figure. Your guess is as good as mine as to whether Bell will develop a cheaper solar battery that will make it industrially significant. At present, it can be used only for minute power sources in out of the way places. Nobody is taking it seriously as a major power source.

Q *Has much been accomplished in the solar distillation of fresh water?*

A A great many people have done work in this field. The big question is what the cost of building a solar still would be. We know what the performance figures are within narrow enough limits. If we just knew how much these stills would cost, we would be somewhere. There is considerable controversy about the cost of fresh water obtained from salt water by solar distillation. Some of the estimates run as low as eighty cents per thousand gallons. Others go as high as three dollars per thousand gallons—and higher. Now, eighty cents per thousand gallons is 275 dollars per acre foot. An acre foot is a unit of measurement used in irrigation to denote the volume of water there would be if you flooded an acre to the depth of one foot.

Q *How does that compare with the cost of undistilled water?*

A Water can be bought in certain California areas for three and four dollars an acre foot today. But that price doesn't reflect any true cost, since federal flood control gets charged for the investment and the farmer practically gets free water. We know from our experience with dams and pumps that the true cost of water would be around 40 dollars per acre foot. In other words, at 275 dollars per acre foot for water from solar stills, nobody is going to want for water to drink. On the other hand, this method is too expensive to use in furnishing the Western farmer with irrigation water.

Q *Can you lower the cost by improving solar stills?*

A Nobody that I know of has come up with any ideas to make startling improvements in these solar stills.

Q *What are the possible photochemical uses of sunlight?*

A There are two lines of attack in photochemical use of sunlight. One is to hunt for a laboratory process to make a fuel or a food from sunlight somewhat in imitation of nature's synthesis of carbohydrates from carbon dioxide, water and solar energy, or to make fuel, such as hydrogen, by photochemical decomposition of water.

No one has gone far in this direction, although the splitting of water into hydrogen and oxygen has been achieved, unfortunately, with low efficiency.

The other photochemical use of sunlight seeks to use nature's own process and to help her along by growing chlorella, the algae that we see in stagnant ponds. Stanford Research Institute, Carnegie Institute, the University of Chicago, the University of Texas and particularly a group of Japanese scientists have all been involved in such experiments. A pilot plant appraisal of the process has been made here by the Arthur D. Little Laboratories which built a small-scale unit on the roof of one of their buildings.

The potential of chlorella

Q *Have these experiments led to anything conclusive?*

A One can probably produce proteins for around 25 cents a pound compared to about 12 cents for proteins purchased in the form of alfalfa or one of the other cheap proteins. This is pretty well supported by the Japanese work under Professor Tamiya. He has done an enormous amount of fundamental work on the growth habits of chlorella and on the characteristics of different strains, some of which multiply well at low temperatures, others at high temperatures. Professor Tamiya believes that protein from this source would be among the cheaper proteins in Japan today—cheaper than egg protein but more expensive than soy bean or fish protein.

Q *How does chlorella taste?*

A Professor Tamiya, at a recent symposium in Arizona, was asked how the stuff tasted. He said that he was under the impression that the Japanese disliked it less than Americans. He has tried to develop many dishes which could profitably use chlorella and thus build up the protein content of the Japanese diet. For example, he has suggested a kind of pistachio-colored ice cream, flavored with chlorella, and rice flour rolls with chorella mixed in to give them a rather interesting green color and a good protein content, as well as many other dishes. No one, however, would care for it as a straight diet.

Q *We have been hearing a lot about solar stoves lately. Some are even finding their way into department stores as novelties. Do you think that such stoves are making significant use of solar energy?*

A There are parts of the world where fuel is quite expensive and where

the development of a cheap solar cooker might have some significance. The National Physical Laboratory in India felt this strongly enough to set up quite a project several years ago. They developed a paraboloidal reflector with a little stand at its focus into which a pot could be set. The paraboloid was placed so that a focused spot of sunlight moved across the diameter of the pot bottom in about the time required to boil water. Thus one would not have to move the pot during the twenty or thirty minutes it took the water to boil.

Q *Is the reflector in wide use in India today?*

A Well, it was thought this device would be bought by the economically lower classes of India and used to prevent them from burning up their cow chips which they should be employing as fertilizer. However, the capital cost of the device, some 16 to 18 dollars, prevented its use by the very people for whom it was really developed. Right now, these stoves can be bought, I understand, from Abercrombie & Fitch in New York as a backyard conversation piece for a great many times the Indian retail price.

Q *Is this paraboloidal device the only way to build a solar stove?*

A There are a number of people who think that there is a better way to build a solar stove. They are thinking in terms of an oven enclosure with aluminum flaps to act as reflector surfaces. This might permit a fairly cheap construction and, at the same time, provide a baking area that would run at high enough temperature. I believe that Dr. Maria Telkes is developing such a stove at New York University.

Q *Are solar stoves significant as a potential heating source for well-developed countries like ours?*

A In my opinion, they have no significance at all in the United States. There are so many, many ways that we can economize before we have to start doing our cooking in time with the sun. I suspect that a good many Indians feel the same way. They don't see why so many Americans are concerned about the development of a solar stove for India.

Q *Perhaps the concern is due to the fact that our energy requirements are increasing all the time.*

A That's true. In the United States we use about one and a half billion tons of equivalent coal a year for food, transportation, light,

heat and manufacturing. The sun sends toward the earth about twenty-one billion equivalent tons of coal *every hour,* giving the U. S. its annual energy requirement in three or four minutes.

Q *With such an excessive amount of solar energy available, couldn't even feeble efforts at conversion be significant?*

A If we were to take the rather phenomenally large figure of energy consumption in the United States and try to install some kind of solar converters with ten per cent efficiency—mind you, we don't have any economically sound converter now, but suppose we did—we would need about twenty million acres of solar collectors in the United States to get our energy supply. This is about six thousand square feet for every man, woman and child. And that ten per cent efficient converter is just the expression of a hope.

Q *What about underdeveloped countries?*

A Of course, if you go to a country whose energy needs are not quite as fantastically high as in our own highly developed economy, then you can get down to a more reasonable figure for the necessary square footage of solar energy collection per person.

Q *Is there any theoretical limit to the amount of solar energy that can be collected?*

A If one were to set up a solar power plant consisting of a paraboloidal reflector with a boiler at its focal point, the efficiency obtainable in principle could be impressively high. The apparent solar temperature is about 10,800 degrees Fahrenheit. The typical combustion temperature of fuel is 3,500 degrees Fahrenheit or so. We know we get 25 to 30 per cent in good power plants and 40 to 42 per cent efficiency in the best, by burning coal. We could expect to get up to 50 per cent efficiency with a solar boiler using the very same techniques in power production that we use in a modern power plant.

Heating and air conditioning stand the best economic chance

Q *Which areas of solar research promise the most significant results in your opinion?*

A I suppose any research man is prejudiced in favor of the particular aspect of the field he works in. I believe that the use of solar energy for heating and air conditioning of dwellings stands the best economic chance. But the things that appear most interesting to

me are in the fields of fundamental research in photochemistry where there is still the possibility of finding a way to imitate nature quite efficiently without the use of any living organisms like chlorella, and in solid-state physics where there is the possibility of developing a more efficient and cheaper solar converter or photo cell.

Q *What research has been done to develop the solar heating of homes?*

A The solar trap, the flat plate collector of solar heat, has been given a new impetus recently by the work of Dr. Tabor in Israel. Dr. Tabor found that a selective black surface is a practical material.

Q *What is a selective black?*

A A selective black is a treated surface which appears black to sunlight. It accepts or absorbs substantially all the sunlight falling on it. When the surface comes up to an equilibrium temperature, the temperature at which useful heat can be extracted, it has outward losses by radiation. To the infrared eye, a properly selective surface is no longer black but shining white.

Q *What does this prove?*

A It reveals that the selective surface produces more of a one-way operation, with energy going in easily and coming out with difficulty. The use of glass to trap the energy permits us to obtain higher temperatures from flat plate collectors. To the trapping action of glass can be added that of the selective black surface. This could make the flat plate collector a significant device economically. Florida already has some 20,000 solar water heaters using simple one-glass, non-selective devices and I think there are other parts of the country where the flat plate collector would be economically sound for home heating.

Q *What kind of research will be necessary, if we are to continue to make advances in the field of solar energy?*

A We need fundamental research, not so much in the uses of sunlight, but in its mysteries. The person doing fundamental research hasn't much of an idea of what will come of it. He isn't guided by man's desire to have cheap power, for example. He is just guided by his own curiosity about life. And that, it seems to me, can lead to the greatest practical results.

Q *Thank you, Professor Hottel.* ■

you may want to know...

MANY people, dismayed at the amount of cash they had to dig up to meet income taxes, don't know that the law provides for situations where withholding payments do not cover the tax bill. To benefit from this provision, all you do is ask your employer to take a specified amount out of your pay check regularly, the federal tax collector is unconcerned with the amount. In the absence of a request from you, however, your employer must withhold according to a table that figures payments at tax rates applying to the lowest income bracket. That—as many taxpayers found out—often is not enough. And if the amount you ask to have withheld turns out to be larger than the tax you owe, you will get the difference back as a refund.

Working Mothers

A MOTHER can claim an income tax deduction of up to $600, if she pays someone to care for her children while she works. But, says the federal tax collector, the deduction is not available to a mother who is away at school. The tax break can be claimed "only if such care is for the purpose of enabling the taxpayer to be gainfully employed," which means while working or looking for a job, but not while taking a course to prepare for one.

Rain Insurance

IF RAIN seems to follow you on your vacation you can now console yourself with vacation rain insurance. The new coverage applies to 100 popular resort areas in the nation, and is sold in amounts of $100, $200 and $300 per week for 14, 21 or 28 days. Premiums are a flat 5% of the total coverage bought, and range from $10 to $60. You collect only if there is "excessive rainfall" during your vacation for a certain number of days. You collect 10% of your insurance, for example, if excessive rainfall, as defined by the U. S. Weather Bureau, is recorded for at least 5 days during a two-week vaca-

tion. For 6 days of rain, you get 25%; 8 days, 60% and 10 days, 100%. The insurance company's scale varies proportionately for three- and four-week vacations.

Driver Education

THE Red Cross, which has for years offered courses on water safety and first aid, now gives one to make you a safer driver. The course, originally developed for the organization's volunteer drivers, is free but may not be available at every local chapter.

Duty-free Gifts

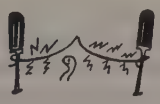
UNITED STATES citizens abroad may now send home *duty-free* gifts valued at not more than $10 each to as many people as they wish. These gifts, although they need not be included in the sender's $500 duty exemption, cannot include perfume, alcoholic beverages or tobacco.

Attention, Veterans

THOUSANDS of World War II veterans have an average of $200 apiece coming to them, and the Treasury Department wishes they would take it so that its books could be cleared up. The money is in bonds issued as payment for unused leave to veterans discharged between April 1, 1943 and Oct. 1, 1946. More than 130,000 veterans still haven't cashed their bonds, which stopped drawing interest in 1951.

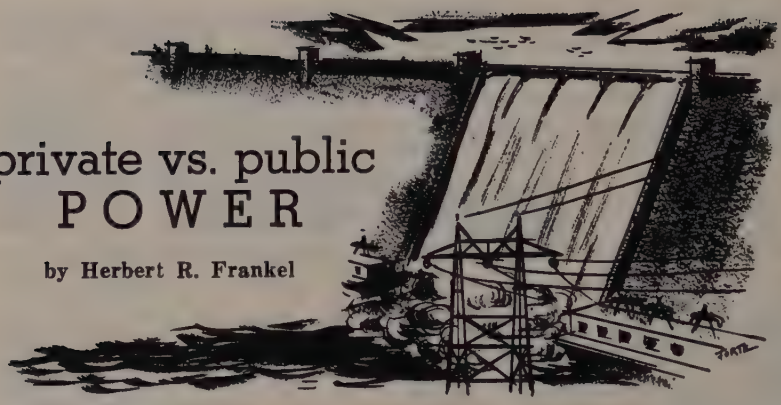
Spreading Out

ANY child who has been going barefoot during the summer or wearing loose-fitting shoes or sandals should have his school shoes checked before he begins wearing them again. By the time school starts, the average child will have "spread" out of the shoes he put aside at the beginning of vacation.



Hot Worms

IF YOU are too lazy to dig for worms for fishing, then this is for you: Using a long electric cord and 2 ice picks, tape each wire of the electric cord to an ice pick. Push picks in the ground 1 foot apart, then plug in the cord. Worms feel the current and wriggle to the surface while you rock in the chair and wait.—A.G.



private vs. public POWER

by Herbert R. Frankel

Private industries contend that growing government competition is threatening their survival and growth

As ANY campaigner can tell you, public power versus private power is a politically explosive issue in several sections of the country today.

Opponents of public power point out that the government's activities in the electric power field are more extensive than in any other economic field and that many aspects of these activities constitute a negation of our free-enterprise system.

Defenders claim that private enterprise does not have the financial and technical strength to carry out huge multipurpose projects—projects which may combine generation of electricity with flood control and irrigation—and that electricity is a natural resource which should be developed by government to insure benefit to "all the people."

Although electricity is found everywhere in nature—think of the electricity in our own bodies or in the electric eel—it becomes a commercial product when generated in large amounts for specific purposes. It has several unique characteristics when compared with other commercial products. It cannot, for example, be stored—it must be produced *as needed.* And whether the electricity in your home is produced by steam turbines, as in New York, or by falling water, as in Spokane, or even by atomic energy, as will soon be possible in Pittsburgh, it is the same electricity. Only the source used to produce it is different.

If the electricity itself is the same everywhere, so is to a great extent the cost of producing it. Builders of an electric installation, whether private or public, get the heavy, expensive equipment needed from the same industrial sources. Plant construction may vary from locality to locality, as is true of any construction, but in the same locality there is little difference in costs between a public or private builder.

These facts seem to contradict the widely heard charge by private power advocates that government electricity is "subsidized" electricity and that the often lower government rates per kilowatt constitute a serious threat to the competitive existence of private power companies. But why, if the generation of electricity is so monotonously uniform, are the rates for federal power lower? The reasons are quickly apparent. Capital for construction of dams and generators is borrowed at a lower or sometimes nonexistent rate of interest for public works; the government utility pays no federal taxes, and it pays lower state and local taxes, when at all, than required of private utilities.

As the Hoover Commission put it: "Exemptions from tax charges and other economical rate-making practices caused revenues from federal power sales in 1953 to fall about 40 per cent below the value of the power."

But does federal power represent a significant part of the over-all power picture? Perhaps it did not in 1933, when it comprised only 0.7 per cent of the total U.S. generating capacity. Federal power activities kept multiplying, however, and today the government share is 12 per cent. Moreover, with the completion of the federal programs now authorized, public power capacity will amount to about 17 per cent or nearly a fifth of the total. It is estimated that federal projects completed, under construction or authorized have a net worth of about 10 billion dollars.

Aside from advantages in initial construction and operation, the rapid growth of government power has been helped by its distribution practices. These are based on the curious concept that electricity generated by the government must be sold to tax-exempt groups, "public bodies and cooperatives," rather than to private utilities, for resale to the consumer.

As a result, government power remains in tax-free and subsidized channels until it reaches the consumer—a practice without parallel in the fabric of government operations.

The history of the development

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of this concept is both interesting and pertinent. In the early days of the West, street lighting and the pumping of city water supplies created difficult municipal problems for the new towns springing up everywhere. Accordingly, the Reclamation Act of 1906 stated that surplus electricity obtained from irrigation projects should be sold, "giving preference to municipal purposes." As new laws were written, the "preference clause" was retained.

This "preference clause," however, while stipulating the use of the surplus electricity, made no mention of the type of users. The idea of performing a service to preference customers, and keeping them as captive customers, grew out of the legislation for the Tennessee Valley Authority. Two years after the creation of the Authority, in 1935, amendments were made to authorize it to "acquire existing electric facilities used in serving . . . farms and small villages" and to help customers to acquire their own distribution systems. Preference customers of TVA were at the same time prohibited from buying power from outside sources or developing supplemental electricity.

The "public power district" of the Tennessee Valley Authority thus created set an important precedent and soon federal power projects in other parts of the country were being organized along similar lines.

The late Secretary of the Interior, Harold L. Ickes, set the stage for another development by urging his department to assist in the *organization* of public agencies to handle the power, and that such organization should start with the first stages in the planning of a government electrical project. "The statutory objectives are not attained," he commented, "by merely waiting for a preferred customer to come forward and offer to purchase the power." In other words, Ickes expected government salesmen to go out and set up tax-exempt groups in the area, and private utilities discovered it was just about impossible to compete with the "cheap" government power from big hydroelectric projects.

In Georgia recently, interpretation of "statutory duty" became the issue in a case involving distribution of power from the government's Clark Hill hydroelectric project on the Savannah River. The Georgia Power Company had for years been running the electricity from the project through their lines, distributing half to the cooperatives of Georgia. Reviewing the arrangement, Attorney General Herbert Brownell, Jr., ruled that the Sec-

retary of the Interior was not "discharging his statutory duty" if the electricity was disposed to a private company and an equal amount sold to preference customers. Harllee Branch, Jr., president of Georgia Power immediately labeled the decision a precedent for virtual monopoly by government of the power business wherever it operated.

Projecting the policy of the "power district" to its ultimate limits, private companies see the operation being carried out, for example, by the Southwestern Power Administration, a federal power marketing agency for eleven southwestern states, or the Southeastern Power Administration, a similar marketing agency for southeastern states.

Nevertheless, many people feel that any monopoly through public power is a danger to our free economy, and several proposals have been made to insure greater participation by private utilities in the power business. These proposals would, in effect, give private enterprise an opportunity to supply capital for the electric component of new multipurpose dams, limit new construction to dams of which the power to be generated has been sold equitably and in advance to private utilities and public groups, require government power projects to use local distribution systems wherever possible and increase the share of federal power which the private utilities can buy. Also, to eliminate the hardship of unequal rate structures, it is suggested that government rates be fixed to reflect taxes and other costs paid by private utilities.

Do the people living in a public utility district prefer public power? In many cases, there are no complaints. But not long ago, in the Northwest, the Washington Power Company of Spokane, feeling it could no longer do business in competition with the Stevens County Public Utility District, proposed to the utility district board that the issue of which one should serve the area be decided by a countywide election by the customers themselves

The private company's "election campaign" was impressive. It promised immediate construction of a four-million-dollar transmission line which had been held up because the company feared the District would "condemn" it as soon as it was built and use it for the public system. The company also explained that if the people chose private power, additional taxes paid by the private company to the county government would amount to about $17,000 a year, whereas tax *assessments* on its customers by the public utility had averaged $8,000 a year from

1936 through 1955, inclusive.

The public utility board claimed that the private company "outdid" itself in the campaign, but when the people voted, the private company won by a wide margin.

On a national scale, private power advocates maintain that the country's taxpayers are subsidizing power projects which directly benefit less than 10 per cent of the population. This is heard most often in the East where it can be shown, for example, that the residents of New York, New Jersey and Pennsylvania comprise 20 per cent of the total population, pay 29 per cent of the taxes—and get no federal power.

But despite the strongest arguments against public power activities, many competent observers remain convinced of the value and necessity of the huge, multipurpose federal projects. Few would deny that construction of the giant Tennessee Valley Authority dam would have presented insurmountable obstacles for any combination of private interests at the time it was built.

It can rightly be pointed out that power is often only a by-product of installations constructed as part of federal flood control and irrigation programs. Areas which had remained undeveloped by private utility companies now flourish because of federal power projects. And, according to some, long-term defense considerations justify federal development of all possible sources of power.

But what are by-products for federal authorities are the *only* products for private utilities. This specialization has wrought many benefits for consumer and country. Private utilities, while anxious to develop other sources of power and increase their service to the consumer, hesitate to undertake the preliminary necessary steps of financing virgin power projects while federal competition exists and grows. This competition, to them, constitutes a threat to their survival and a threat to their growth.

As long as this unequal competition remains, private utilities will not be making their full contribution to the nation's welfare and prosperity. ■

Answers to True-False Quiz

(1) False *(see page 21)*
(2) True *(see page 29)*
(3) True *(see page 16)*
(4) True *(see page 37)*
(5) False *(see page 40)*
(6) False *(see page 48)*
(7) False *(see page 11)*
(8) False *(see page 58)*
(9) False *(see page 33)*
(10) False *(see page 26)*
(11) True *(see page 6)*
(12) False *(see page 54)*

current trends and outlook

Economics in Action

second quarter statistics show that the "readjustments" which characterized the economy earlier this year are just about over and a business upturn in the third quarter seems likely

IT LOOKS as though the third quarter holds the answer to whether the "readjustments" that have been going on for several months—in **autos** and **housing**, for example—have run their course. In the automobile industry, at least, the worst might be over. July output was 440,000 units as compared with June's 428,000, marking the first upturn in **assemblies** since March, as **sales** got a slight boost from warmer weather. There was uneasiness, though, about the continued slump in **residential housing starts. Construction outlays** in the first six months of 1956 climbed to a record $19.9 billion, 2 per cent above the like 1955 period, but while **industrial building** went up 27 per cent, **private spending** for residential housing fell 8 per cent. Builders blamed tight mortgage and loan money and hoped for easier credit before the end of the year.

Those confident of a third quarter business upturn were reassured by signs of strength in the over-all picture. **Personal income** rose in April to an annual rate of $317 billion, almost $2 billion higher than in March. **Employment**, too, was up, setting a new high in June of 66.5 million. **Government spending**—federal, state and local—was rising, with $5.7 billion coming this year alone from the new **federal highway program.** And the record capital spending by business was expected to continue in the third quarter at an annual rate of $36.7 billion, although a shortage of **structural steel** threatened some projects.

Economists continued to worry, however, about the possible deflationary effect of **inventory unloading**, if that should occur soon. **Manufacturing and trade inventories**, $85.8 billion at the end of May, $7 billion larger than a year ago, were generally considered too high despite rising manufacturers' sales (the highest on record in May).

To others, there seems to be more danger in inflationary pressures. **Steel prices** are due to go up with the resumption of production. To the consumer, prices seem already too high. The Consumer Price Index for June was 116.2 (1947-49=100), up from the record set in October 1953 and 1.6 percent higher than in June last year. However, the major factor was rising **food prices**, and it was predicted that, though the Index might go to a new peak by August, **summer harvesting** would bring a change.

Most economists, though carefully watching for danger signals, are convinced that business as a whole is good. But noting a sharp upturn in **business failures** in May, one banker commented wryly that few were engaged in "business as a whole." ■

The German Historical School

Rejecting the "theoretical" method of orthodox economics, they turned to history as the true guide to workable generalizations

THE relatively late emergence of Germany as a political and industrial power in the latter half of the nineteenth century, helps to explain much that was "different" in her economic and political thought. Free trade, for example, must have seemed strange to nineteenth-century Germans who, as newcomers on the industrial scene, could not hope to compete successfully with their industrially more advanced neighbors. Lacking the private capital resources of a country like England, moreover, *laissez faire* appeared to be something of a "luxury" to German administrators and businessmen—a luxury which, they believed, Germany could not afford. The belief was that free competition, could not, under such circumstances, result in the best possible utilization of scarce economic resources.

Moreover, there had always been a strong tradition of government intervention and planning in German economic life, even before German unification in 1870. Under these circumstances, it was only natural that the new national state should have approached the problems of industrialization from a rather different point of view than her Western neighbors.

Economic theory, as it was understood in England, had never been very strong in Germany, where economic questions tended

to be discussed from a legal and political point of view. Economics continued to be taught as an aspect of law and government administration rather than as a separate subject in its own right. As a result, German economic theory tended to concentrate on finding solutions to practical questions of policy rather than on discovering general laws about how the economy works.

It is against this social and intellectual background that we must consider the work of the German Historical School which was to dominate German economic thought until well after World War I. While the members of this school disagreed about many things, they were one in insisting that the traditional economic theories of Smith, Malthus and Ricardo did not adequately explain what happened in the economic world.

In particular, German economists challenged the Classical emphasis on individual gratification as the chief motive behind economic activity. They felt that the individual was, first and foremost, a member of the community and, in particular, of the newly formed German nation. Public duty, rather than private gain, is the central aspect of the individual's life—something they did not go out of their way to prove. The Classical emphasis on private profit they regarded not only as immoral but as incorrect.

Indeed, they challenged the entire structure of orthodox economic theory by striking at its method. No valid economic generalizations, they insisted, can be deduced from general principles since there are no such principles which will apply uniformly in all places and at all times. Instead of such "abstract theorizing," members of the Historical School studied the record of history in the hope that it would eventually reveal something about the general behavior of prices, wages, interest rates, etc.

Of course, this insistence on supplementing economic investigations with historical and sociological research was nothing new. Adam Smith's *Wealth of Nations* and Malthus' work on population are full of historical and sociological observations. The unique contribution of the Historical School was its attempt to reconstruct *all* of economic theory from this point of view.

Thus, Wilhelm Roscher (1817-94), the pioneer of the new approach, stressed the need for testing all conclusions of the Classical School against the historical facts. His colleague, Bruno Hildebrand (1812-78) went even fur-

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This is the sixteenth article of a series in CHALLENGE dealing with the economic development of Man.

ther. Rejecting the possibility of any purely "economic" theory—Classical or otherwise—Hildebrand borrowed from anthropology and sociology as well as from history to evolve suggestive but rather vague ideas concerning the various stages of economic development. Economic systems, he insisted, did not come into existence without a long evolution; they had changed and would continue to change as the basis of economic life changed.

The implication was that there are no timeless economic laws in the sense that there are timeless laws in physics. Each economic system, moreover, has its own peculiar needs which it has to meet in its own way. Nearly all the members of the German Historical School favored a consistent policy of national self-sufficiency for Germany as the only way she could develop her industry. At the same time, they readily conceded that a free trade policy might be wiser for a highly developed nation like England.

The best known and most typical representative of the German Historical School is Gustav Schmoller (1838-1917) who dominated German economics from 1870 until his death. Unlike Hildebrand, Schmoller conceded that economic laws might exist, but like the Historical School he insisted that the only way to discover them was by means of meticulous historical study. Under his direction, a group of able economists published a mountain of monographs and statistical surveys of banking institutions, cartels, labor unions, agricultural prices, etc., that are generally recognized as among the most valuable empirical work published during this period. On the other hand, none of this information was considered by Schmoller and his cautious colleagues to be adequate to justify generalization. In terms of knowledge that could be applied to other situations, the mountain of research yielded only a molehill of results.

It is hardly surprising that the method of the Historical School, so different from the prevalent mode of economic thinking, should have come under a barrage of criticism. Perhaps the most important, certainly the loudest, critic was the Austrian economist, Karl Menger, whose work as one of the founders of the Marginal School we discussed last month. Menger ridiculed the German emphasis on historical inquiry and insisted that any useful economic theory must be based on logic.

The debate between Menger's disciples and Schmoller's came to be known as the *Methodenstreit*, or dispute over methods, and it kept good economists in both camps

from much constructive work. Reading about this debate today, the arguments of both sides seem absurdly extreme. Economists today agree that both methods have their place in economics and that it is, in fact, ridiculous to rely on one or the other exclusively.

Their other major criticism of Classical theory—the assumption that individual self-gratification is the principal force behind economic behavior—was not quite as revolutionary as might appear. For, the question remained: if individual gratification is not the aim of all economic endeavor, what is? The Historical School suggested, no doubt correctly, that a sense of public duty was an important factor, which had been neglected by the Classical School. On the other hand, neither the Classical School nor the Historical School questioned the fundamental rationality of economic behavior. Both agreed that when Hans bought a savings bond (because he wanted to save money according to the Classical School, or because he wanted to help his country according to the Historical School) he did so for a rational reason and not because he unconsciously felt guilty about not having served in the armed forces. Indeed, this assumption of rationality was not to be challenged until Veblen, and even today our economic theory is still based upon the proposition that most economic behavior is reasonable. In fact, if we didn't believe in the basic reasonableness of human behavior, no economic theory would be possible.

While the Historical School made no positive contribution to economic theory, it did pinpoint certain weaknesses in the orthodox Classical approach to economic problems. Its careful studies of specific economic institutions served to discourage a dangerous tendency among some economists to generalize on the basis of incomplete empirical information. Similarly, its emphasis on the historical evolution of economic institutions and practices was a healthy reaction to the tendency of some Classical economists to assume "timeless" economic laws. By refusing to look upon economic phenomena in isolation, moreover, the Historical School encouraged economists to study the close relationship between economic, social and political life.

These "contributions," however, were never systematized by the Historical School. That task was left to such diverse economists as Thorsten Veblen and Alfred Marshall, whose works we shall discuss in subsequent chapters. ■

NEXT MONTH: The American Institutional School brings a new point of view to some old economic problems

The Patent Slump

Does it mean that there is less inventing, or merely less dependence on the patent system?

by Joel B. Dirlam

PATENTS have been relegated to the background in the business picture since 1930. Although the rate of invention today is proceeding at a dizzying clip, the number of patents applied for and granted has been steadily declining in the last twenty-five years, instead of rising with other business indices.

In addition, thousands of existing patents are being made available to the public without royalty as the result of consent decrees. Thus, in January 1956, the government's anti-trust proceedings against the American Telephone & Telegraph Company ended in a consent decree under which 8,600 patents held by the company were thrown open, with all future patents to be freely licensable by all comers at a royalty limited by the court. Despite the possibility that the Supreme Court would have upheld the right to charge reasonable royalties, A T & T evidently felt this right

was not worth fighting for. Similarly, International Business Machines in January 1956 released its patents on tabulating cards and machinery.

The acceptance of such decrees would seem to indicate less and less reliance on patent protection by the major industries of America. And whether causing this trend or reflecting it, the higher courts have shown an increasing unwillingness to sustain the validity of contested patents or to approve judgments against alleged infringers.

If our patent system were eternally wedded to the creation and commercial development of inventions, then the declining use made by business of patent protection would be cause for serious concern. But is it?

THERE is, in fact, no evidence that the growing indifference of business to patents or the attacks by the government on patent abuses has had any effect on the number of inventions or the amount of money and time being spent on research. The McGraw-Hill surveys of business capital plans show that research appropriations by private industry grew from 3.7 billion dollars in 1953 to an estimated 5.5 billion dollars in 1956. It is expected to reach 6.3 billion dollars by 1959, when it is predicted that 11 per cent of manufacturers' revenues will come from products that were not on the market in 1955.

Clearly, some of the assumptions of our patent law, if not the law itself, are obsolescent. Set up under the Constitution as a means "to promote the progress of science and the useful arts," our patent system has been conducted on the assumptions that industrial progress depends upon the inventions of individuals and that reward to the individual inventor is necesary to stimulate his creative genius.

From the eighteenth to the early twentieth centuries, individual inventors such as Watt, Edison, Marconi, McCormick, the Wright brothers and De Forest gave the world the steam engine, the electric light, radio, the reaper, the airplane and the first vacuum tube. According to the theory behind our patent law, they would never have pushed their labors to the point where the world would be benefited without the promise of patent protection.

It would, of course, be fatuous to minimize the work of individual genius in the major inventions of the past. Even then, however, there were some valid objections to the patent law assumptions.

FOR example, the assumption that material reward is the only

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motive of inventors has been disproved many times. Cartwright, the clergyman-inventor of the power loom, had no end in view but the benefit of mankind. And Henry Ford was indifferent to patenting his major triumph, the assembly line, and seems to have cared not at all if he was copied.

Inventions often seem to appear in several quarters almost simultaneously, when the time is ripe for their commercial application. Even Watt, who labored so hard to make his "flash of genius" a commercially practicable machine, faced—and bitterly attacked as a patent infringer—a potentially better high pressure engine of the Trevithicks. The definitive inventor of the internal combustion engine has yet to be rescued from mid-nineteenth century obscurity, although the U. S. Patent Office in 1895 blithely assigned to George Selden, a patent attorney who had never built one, priority in inventing such an engine.

But even when the individual inventor is granted a clear patent, his reward is rarely sufficient to be considered an incentive. A patent was of little help to poor John Fitch, whose steamboats went bankrupt on American rivers years before Fulton's *Clermont.* Philo Farnsworth contributed a great deal to television, but 12 years after his experiments began, his patents could not be sold for anything like the one million dollars that had by then been invested in them

Today's technological advances come almost exclusively from the research laboratories of large companies. In an age when a mass spectrometer costs 50,000 dollars, when 40,000,000 dollars must be invested before an artificial fiber is brought to commercial fruition, or when General Motors invests 100,000,000 dollars in a research laboratory, the individual inventor working alone in his home laboratory is seriously handicapped in any effort to get the equipment needed for the highly specialized research of modern technology.

THE shift from individual to corporate invention has had a noticeable effect on the commercial value of patent protection. Where the individual inventor can still play a role, financed by a small manufacturer (which appears to be characteristic of such fields as machine tools, instruments and some electronic industries), the patent provides assurance that a useful invention will repay development costs. But among the big corporations, it is rare that a new product or process, once on the market, cannot be somewhat successfully copied by competitors. Thus, a 17-year

patent protection seldom offers the opportunity to recover the heavy research costs and is relatively meaningless commercially. In a highly competitive market, moreover, the advantage of secrecy often outweighs the protection offered by recording a patent.

In view of the expense of modern methods of research and development, it is clear that the patent system, if it is to function effectively, must offer an incentive to the large corporation to pursue its researches through teams of scientists. No longer is it important, or indeed possible, to identify the individual who, as a member of a team, could be called the "inventor" of a new process or product.

The diesel locomotive, talking pictures, the continuous rolling mill, transistors, the bewildering number of new plastics—all were "invented" by teams of engineers, chemists or physicists working in large industrial laboratories within coordinated plans of research.

This standarization of research techniques has made many companies unwilling to avail themselves of the patent privilege. The automobile manufacturers, who are far from being laggards in improvements, on the whole ignore patents. Harlow Curtice, President of General Motors, has commented on how the insistence of the mechanical departments of each railway that their patents be used by steam locomotive builders sabotaged mass production and raised costs.

Or take the changing attitude of the petroleum industry. At one time petroleum refining companies placed great reliance on the patent system. Standard of Indiana collected millions in royalties from licensing the Burton process of thermal cracking. But thermal cracking patents became so inextricably tangled in litigation in the 1920s that it appeared that almost every owner or user of a cracking patent would be liable for infringement to each of its competitors As the only alternative to chaos all the patents were thrown into a patent pool which, in effect, allowed every refiner to use every other refiner's patents at nominal fees and thus, for all practical purposes, rendered the patents valueless.

The chemicals, electronics and machine tool industries, which account for most of the patents with commercial value being issued today, are the principal exceptions to this general trend away from patent protection. The electronics industry, until AT&T's recent capitulation, attached great importance to patenting, probably because competition among the giants like Westinghouse, RCA,

General Electric and AT&T was kept within bounds by a vast patent pool that confined each firm to its own territory. The chemical industry has also been firm in believing in patenting, partly for the same reasons as the electronics companies, partly because processes have proved easier to patent than products and partly because patenting provides protection against foreign competition. In the machine tool industry, too, where competition is still predominantly among small manufacturers, patenting has remained valuable.

THE growing hostility in the courts to patents, unless they indicate what the Supreme Court has called "the flash of creative genius," has also contributed to the changed attitude of business. During the years 1950-1954, the United States Circuit Court of Appeals invalidated 60.7 per cent of the patents litigated before it as compared with 33.4 per cent in 1925-1929. Judicial hostility together with the vigorous attacks by the antitrust division of the Justice Department on patent pool restrictions have convinced many businessmen that patenting is more trouble than it is worth.

Are there any patent reforms which might make the system more useful? Some relatively unimportant procedural changes would be desirable. A tightening of the statutory standards for invention, for example, might reduce the amount of time and money now wasted in the filing of thousands of useless patent applications. And something might be done to check the abuse of patent office procedure by which applications are kept alive for long periods before their final issuance in order to extend far beyond 17 years the inventor's control of a device or process.

But by and large, the judiciary and the antitrust division have in the past two decades managed so effectively to adjust the patent system to underlying economic realities that the process of invention has, if anything, been encouraged, and there appears to be no need for drastic revision of the laws. ■

Research Race

THE ELECTRICAL equipment industry invested 778,300,000 dollars in research and development to lead six other large industrial groups in the race for new products. The breakdown of 1953 figures, the latest available, shows that the aircraft industry was not far behind with appropriations of 758 million dollars. Also in the running were: chemicals with 361 million dollars; machinery with 319 million dollars; scientific instruments with 171 million dollars; petroleum, 146 million and telecommunications, 113 million dollars. dollars.

Challenge Quiz

HOW WELL can you do with this true-false quiz? Test your ability to increase your knowledge through reading. Ten correct answers is Excellent; 9, Good; 8, Average. If you do the quiz *before* reading the articles, 6 correct answers is Good. Answers on page 52.

(1) The gold buried in Fort Knox equals the amount of money in circulation in the U.S.

True ☐ **False** ☐

(2) The 3% of Soviet Russia's farm land that is not collectivized yields almost 10% of the total produce.

True ☐ **False** ☐

(3) The number of cars per person in 1975 will be substantially what it is today.

True ☐ **False** ☐

(4) Fewer than 5% of high school graduates ever studied economics for even one term.

True ☐ **False** ☐

(5) Although much research remains to be done, we already have many economic ways of utilizing solar energy.

True ☐ **False** ☐

(6) Because the U.S. government generates huge quantities of electricity, its cost of production is lower than private companies'.

True ☐ **False** ☐

(7) Even the most highly developed computers will never be able to make decisions.

True ☐ **False** ☐

(8) Despite the research laboratories of large companies, most inventions still come from individual inventors.

True ☐ **False** ☐

(9) The Soviet foreign aid program is too limited in resources to challenge similar U.S. programs.

True ☐ **False** ☐

(10) Hypnosis cannot be used as a therapeutic tool until considerably more research is done.

True ☐ **False** ☐

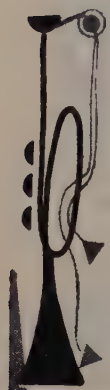
(11) Economic and geographical shifts in population have lifted once sectional problems into the national arena.

True ☐ **False** ☐

(12) The German Historical School was composed of men primarily interested in economic history.

True ☐ **False** ☐

Dept. of Better Mousetraps



From the World of Industry: an outdoor heating unit that warms objects in its path without changing the temperature of the surrounding air . . . shell-less eggs wrapped in unbreakable, transparent bags . . . a picture tube, attached to your TV set, which can indefinitely hold any still shot of a program in progress, while the program itself continues on the regular screen . . . a device for telephone party-lines that allows only the proper phone to ring . . . an amphibious trailer . . . an instrument that can detect a hole so small it would take 120 years for a thimbleful of air to leak through . . . and bank tellers' booths on wheels for customers in cars.

* * *

Personal Business: *plastic Stick-On lenses to convert regular glasses to sunglasses . . . sequined Bermuda shorts for cocktail parties . . . a lady's turquoise quill pen with a gold ball-point . . . a mosaic kit by numbers . . . . a framed wedding invitation that plays the Wedding March . . . sheer stockings with a divided toe for sandals . . . and, from the jungles of Haiti, a do-it-yourself Voodoo Kit.*

* * *

Around the House: a shower curtain with small magnets fused into the hem to keep it sticking to the tub . . . for a south wall, a sundial with rust-proof cast aluminum pieces . . . wallpaper wired to give off heat . . . a clock that operates on two flashlight batteries for 900 days . . . a gadget that spreads paste on walls evenly for do-it-yourself wallpaper hangers . . . a wound-covering, available only on prescription, that comes in an aerosol-type bomb . . . and a white ceramic cigarette box with a picture of your home on top, made from any size negative or picture.

* * *

In the Garden: *a disposable and portable grill with built-in charcoal and fire starter. Gives 60 minutes of hot coals for smaller broiling jobs . . . a meter to register the temperature of outdoor barbecue grills . . . a Back Yard Bubble to transform any outdoor faucet into a drinking fountain . . . and a grass cutter in the shape of a golf club so that you can practice your swing while you cut the grass.*

* * *

Kitchen Kuties: non-fattening ice cream cones . . . an insulated milk box to keep milk delivered early from spoiling on hot, summer mornings . . . a plastic corn butterer . . . a combination scoop, funnel and measuring cup with a thumb control to regulate flow . . . a new insecticide said to be effective on bugs immune to DDT . . . and a 22-carat gold-plated egg beater. ■

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Are Controls Strangling the Railroads?; railroads insist that greater freedom from restrictive regulations is necessary if they are to meet the competition from other transportation media. Morrison Colladay. Feb. '56, p. 59-62.

How Necessary Is a Free Economy?; unlike other living creatures, man has a biologically "open" character which thrives on freedom and discontent. Sidney I. Abelson. Nov. '55, p. 24-28.

Stand-by Credit Controls for the

Fed?; giving the Federal Reserve Board stand-by controls might help to mitigate business cycles without encroaching on the principles of free enterprise. William P. Snavely. May '56, p. 24-28.

The Great Balancing Act; no one can be sure just what a balanced budget is, because it is difficult to tell which expenditures must equal what receipts. Edwin L. Dale. Jan. '56, p. 6-9.

When Is the Nation's Debt Too High?; the debt's economic consequences need not be severe, if national income keeps pace with annual interest charges. Sidney Weintraub. Mar. '56, p. 24-28.

Health, Education and Welfare

Can We Have Both Mass and Quality?; interview with Henry M. Wriston, President Emeritus, Brown University; Executive Director, The American Assembly, on whether we can have both mass and quality in all phases of life, including education. May '56, p. 30-35.

Clearing the Air; is no light task financially or otherwise, but the consequences of a polluted atmosphere may be too heavy to bear. Oct. '55, p. 53-56.

Educational TV—Progress Report; the first steps are encouraging, but some serious obstacles still exist. Nazaret Cherkezian. June-July '56, p. 38-42.

Foundations: how they operate as society's risk capital; "practical" advancement may result, but there is no way of determining at the outset whether an educational or research project, made possible through foundation grants, will "fail" or "succeed" in achieving or proving what it hoped it would. Arnold J. Zurcher. Oct. '55, p. 16-19.

Hospitals Are a Special Kind of Business; interview with Raymond P. Sloan, Director, Institute of Hospital Administrators; and President, The Modern Hospital Publishing Co., Inc. Jan. '56, p. 32-37.

New Hope For the Handicapped; paradoxically, modern medicine is increasing the number of physically handicapped, but rehabilitation facilities are on the rise. Howard Rusk and Eugene J. Taylor. Apr. '56, p. 59-62.

Our Education Needs Will Be Met; interview with Henry T. Heald, Chancellor, New York University, on the problems facing higher education. Mar. '56, p. 34-39.

Security in Old Age; the life-and-death problem that plagues millions. Marion L. Briggs. May '56, p. 59-62.

The Problem of Juvenile Delinquency; interview with Martha M. Eliot, M.D.; Chief of the Children's Bureau, Dept. of Health, Education and Welfare. Oct. '55, p. 36-41.

The Right Support; rehabilitating the disabled will pay off, not only in dollars and cents, but in countless thousands of self-reliant and useful citizens. Enid Wolf. Oct. '55, p. 33-35.

Labor-Management Problems

Bargaining, Industry-wide; when "key" companies and unions bargain collectively, they set an industry-wide pattern. Robert E. Sibson. Dec. '55, p. 60-62.

Guaranteed Annual Wage — The Record Up To Now; GAW agreements indicate that some form of company-financed employment compensation will become a fixture in the labor scene. A. H. Raskin. Nov. '55, p. 11-15.

Guaranteed Annual Wage — The Future; the resulting increase in unemployment compensation will contribute to the nation's economic stability. Sumner H. Slichter. Nov. '55, p. 16-19.

Labor and Tomorrow's Economy; the future worker will be closer to the over-all operation of his company, but more dependent on his union. Henry J. Meyer. Mar. '56, p. 15-19.

New Concepts in Employee Stock Ownership Plans; managements seek a community of interests by encouraging employee stock purchases and trying to avoid pitfalls that once ruined such programs. Sam Shulsky. May '56, p. 54-58.

Right-to-Work Laws: They Weaken Collective Bargaining; laws which make membership purely voluntary undermine union security. Charles C. Killingsworth. Feb. '56, p. 30-33.

Right-to-Work Laws: They Protect Individual Freedom; in an economy based on free choice, workers should not be forced into union membership in order to earn a living. Merryle S. Rukeyser. Feb. '56, p. 34-37.

The Union in Tomorrow's World; while maintaining allegiance to capitalism, unions will extend collective bargaining and encourage interest in politics. Harold W. Davey. Apr. '56, p. 11-15.

Unions and Monopoly; should unions be regarded as monopoly organizations and, if so, what are the implications for public policy? Edward S. Mason and Martin Segal. June-July '56, p. 6-10.

Man and the Economy Series

No. VII: The World of Adam Smith; Adam Smith's "The Wealth of Nations" remains a compelling landmark in the development of modern economic thought. Oct. '55, p. 28-32.

No. VIII: After Smith: The Commentators; economic thinkers start furnishing the house that Adam Smith built. Nov. '55, p. 46-49.

No. IX: Gloom and Doom (c. 1800); still the subject of contradictory judgments, Thomas R. Malthus is dubbed by history as the first of England's pessimistic economists. Dec. '55, p. 56-59.

No. X: More Gloom and Doom: Ricardo; although history has refuted many of David Ricardo's gloomy theories, in his time they seemed to explain prevailing economic conditions. Jan. '56, p. 55-58.

No. XI: The Summation; John Stuart Mill weaves Classical economic doctrines into a social philosophy representing the ideals of Victorian England. Feb. '56, p. 55-58.

No. XII: The Utopians; with the Industrial Revolution making a shambles of the old order, Utopian economists sought refuge in plans to create a perfect world. Mar. '56, p. 51-54.

No. XIII: Marx: Philosopher of Revolt; drawing largely on Classical economic doctrines, Karl Marx evolved a theory which he called "scientific" socialism. Apr. '56, p. 51-54.

No. XIV: Marx's Socialist Interpreters; capitalism refuses to behave the way Karl Marx said it would, causing even Marxists to disagree on how socialism is to be brought about. May '56, p. 50-53.

No. XV: The Marginalists; a new school of economists emphasizes utility as the most important factor in determining value in a competitive economy. June-July '56, p. 52-56.

No. XVI: The German Historical School; rejecting the "theoretical"

method of orthodox economics, they turned to history as the true guide to workable generalizations. Aug.-Sep. '56, p. 54-57.

Marketing and Consumer Economics

A New Face for Retailing; recent advances in retailing techniques promise bigger values for the consumer's dollar. Perry Meyers. Dec. '55, p. 21-23.

"Blue Jean" Gold Mine; American businessmen are finding it profitable to develop the fast growing multi-million-dollar teen-age market. Irving Kaufman. Feb. '56, p. 46-49.

Facts, Not Plans; the National Bureau of Economic Research, a private organization, is one of the nation's most influential fact-gathering bodies. Solomon Fabricant. Jan. '56, p. 19-23.

Fair Trade's Losing Battle; long-term economic trends are undermining the practice of establishing minimum retail prices by manufacturers. Marvin Frankel. May '56, p. 45-49.

How Much Fraud in Our Advertising?; less than most people suppose, though we shall always have a small amount. Alfred Gross. June-July '56, p. 26-29.

Predicting People's Behavior; new forecasting techniques are overcoming some of the difficulties of foretelling how people will act under varying conditions. Paul B. Sheatsley. Apr. '56, p. 47-50.

The Fair Trade Dilemma; should price-setting, which protects the small retailer, be sacrificed for the sake of providing cut-rate prices to the consumer? Herbert Koschetz. Oct. '55, p. 58-62.

The Market of the Future; greater productivity, increased earnings and larger families promise a vastly enlarged market in twenty years. Sidney Klein. May '56, p. 20-23.

The Profit in Counting Noses; accurate projections of population enable all segments of the economy to plan for expansion. Harvey Berman. Jan. '56, p. 45-48.

What Is Competition?; competition involves more than price cutting; style and quality play an equally important role in the making of a sale. Lawrence Abbott. Apr. '56, p. 6-10.

What Price Distribution?; with distribution costs taking sixty cents out of every dollar spent on finished goods, many people ask: "Is it worth it?" David Kaplan. Mar. '56, p. 42-46.

What's in a Price?; should there be a standard price on an item everywhere, or varying prices depending on the type of service a retailer renders? Alfred Gross. Mar. '56, p. 6-9.

Who Pays the Cost?; the consumer in the long run pays for the rise in labor costs when there are rapid and major wage increases. Leo Wolman. Oct. '55, p. 42-45.

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A New Pattern in Politics; sectional issues have become national in scope and both major parties are adapting themselves to this change. Albert Somit. Aug.-Sep. '56, p. 6-10.

Changing Pressures on Representation; allegations that geographic representation is outmoded underestimate the flexibility of our present political system. Karl Schriftgiesser. June-July '56, p. 16-20.

The Presidential Image; what do most people see as the characteristics of presidential timber? David A. Shannon. Apr. '56, p. 42-46.

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Conservation Means Proper "Use"; interview with Secretary of the Interior Douglas McKay. Feb. '56, p. 38-43.

Destination Antarctica; world race for the South Polar region. Morrison Colladay. Jan. '56, p. 15-18.

Private vs. Public Power; private utilities contend that growing government competition is threatening their survival and growth. Herbert R. Frankel. Aug.-Sep. '56, p. 48-52.

Science Explores a New Frontier: Solar Energy; interview with Hoyt C. Hottel, Director, Fuel Research Laboratory, Massachusetts Institute of Technology. Aug.-Sep. '56, p. 40-45.

The Big Thirst; the growing Southwest faces a water shortage which, if untreated, threatens to turn the area into an irretrievable wasteland. Frank A. Tinker. Oct. '55, p. 20-23.

The Changing Resources Picture; our requirements will skyrocket, but more efficient extraction, substitutes and increased imports will assure continued economic growth. Arnold C. Harberger. Feb. '56, p. 15-19.

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Bridey Murphy Went Thataway; her ghost is arousing the ire of physicians working to establish the medical value of hypnosis. Jean Watson. Aug.-Sep. '56, p. 26-28.

Economic Frontiers in 2000 A.D.; what a scientist dreams of. George R. Price. Dec. '55, p. 52-55.

From Invention To Inovation; the development and introduction of new industrial processes and products is daily becoming more costly and complex. Irwin M. Stelzer. Feb. '56, p. 20-24.

Industry's "O.R." Men; "call in Operations Research" is the latest cry as industry summons the aid of science. Richard S. Halpern. Mar. '56, p. 20-23.

The Price of Progress; whether in good times or bad, changing tastes and technological developments force us to pay the social and economic costs of change. Ralph Hidy. Apr. '56, p. 25-29.

What Can Be Done About the Weather?; interview with Bernhard Haurwitz, Chairman, Department of Meteorology and Oceanography, New York University. Apr. '56, p. 34-39.

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A New Management Philosophy; many consider it to be our most valuable contribution to European recovery. Egon Kaskeline. Jan. '56, p. 59-62.

Business on a Visa; our consulates provide valuable services, free, to Americans who want to do business in foreign countries. Frank A. Tinker. Mar. '56, p. 60-62.

Economic Aid—Soviet Style; it has won over many pro-West allies with less money and in less time than the U. S. foreign assistance program. Egon Kaskeline. Aug.-Sep. '56, p. 33-36.

For Asians—Aid and Counter-aid; competitive U. S. and Russian foreign-aid programs seek to win the "uncommitted" millions in the East. Egon Kaskeline. Oct. '55, p. 24-27.

The Puerto Rico Story; recent years have witnessed remarkable economic progress in Puerto Rico. Renee Little. May '56, p. 42-44.

Vest-pocket Foreign Aid Works; how one "small" businessman fostered private economic aid abroad. T. K. Bowen. June-July '56, p. 43-46.